Safety Maintenance and Production

EST. 1901 • AMERICA'S PIONEER MAGAZINE IN ITS FIELD • SEPTEMBER, 1956 • 50¢

All-Plastic Goggles

AO† LIGHTWEIGHT, SPECTACLE GOGGLES PROVIDE COMPLETE INTERCHANGE OF LENSES AND TEMPLES!

Illustrated are Nos. 786 and 787 — two of the latest and lightest AO All-Plastic Lens Goggles, with noncorrosive endpieces and metal skull temples. In the field of lightweight eyecare they show the same benefits of applied engineering as AO's goggles for heavier exposures.

Lenses, endpieces, and temples can be easily replaced or assembled. One-piece lenses of either clear or green acetate have high impact resistance. Replacement is simple — just slide off the endpieces and re-assemble. No. 786 is ideal for use over regular spectacles for temporary or "on and off" wear. Model 787 is identical except that it has side shields for added protection against laterally flying particles. Both of these goggles are available with comfort cable temples upon request.

Recommended Uses

(1) For light grinding, light machining, spot welding, woodworking, yard work where dust hazards exist, and for protecting B Safety Glasses or regular glasses.

(2) For plant visitors and others who may be exposed to eye hazards for short periods.

Keep an adequate supply of these goggles (and extra lenses) on hand always for good fitting. Check with your nearest AO Safety Products Representative.

American Optical
SAFETY PRODUCTS DIVISION

†T.M. Reg. by American Optical Company

(For details, use key # V-1 on card on page 37)

COMPARE ITS BIG SIZE

Magic Lens Tissue
SILICONE TREATED

The white space on this page is exactly the size of the Magic sheet; over 50% larger and our paper costs you less. It has twice the tearing strength. Loaded with sparkle-power, it polishes—and protects—as it cleans crystal-clear.

Compact Self-Mounting Dispenser has no moving parts. No drilling, No screws. Just stick it to the wall.

Magic Heavy-Duty Cleaning Station is for heavy grit areas or where anti-fog protection is needed. Magic Lens Cleaning & Anti-Fogging Fluid is pressure-packed. 1,400 applications per can. One Magic can equals 4 old-fashioned bottles. That's the first saving. No pump. Nothing to refill.

Indestructible Dispenser locks can in place. No pilferage possible. Releases each sheet of paper 1-by-1, not in bunches; greatly reducing waste.

Magic Heavy-Duty Paper, not silicone treated, is our superb wet-strength tissue. No scratching on plastic, and no lint. Again, you save money.

Ask to exchange Magic for your old cleaning stations FREE, or order anew—now! Wire or write us or your Safety Jobber today!

Compare the Quality, the Size and the Price and Buy.

Magic Lens Tissue, 6 refills	per carton, $8.40
Magic Lens Tissue Dispenser	each, $2.50
Magic Heavy-Duty Paper Dispenser	each, $5.95
Cleaning & Anti-Fogging Fluid, Twelve 12 oz. cans	per carton, $12.50
Magic Heavy-Duty Paper, 18 giant refills (760 sheets ea.),	per carton, $11.60

All prices F.O.B. shipping point

Exchange all your other Stations for Magic FREE

Magic Lens Tissue
America's leading Eye-aid for Safety.

Magic Heavy-Duty Cleaning Station
Science's answer to Grit, Fog, and Grime.

The Silicone Paper Company of America Inc. 75 E. 45th St., New York 17, N. Y.

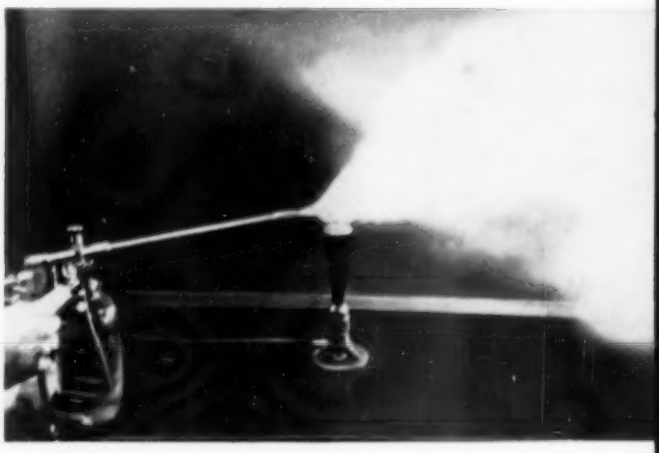
(For details, use Key # V-2 on card on page 37)

Published by Alfred M. Best Company, Inc., Publication Office, Columbia Turnpike, Box 232, Rensselaer, N. Y. Editorial and General Offices, Best Building, 75 Fulton St., New York 38, N. Y. Entered as Second Class Matter at Post Office at Rensselaer, N. Y. Under Act of March 3, 1879. Subscription rates, $4.00 Per Year in the United States; $5.00 in Canada; Foreign, $6.00. Single Copies, 50 cents. Publication Date 1st.

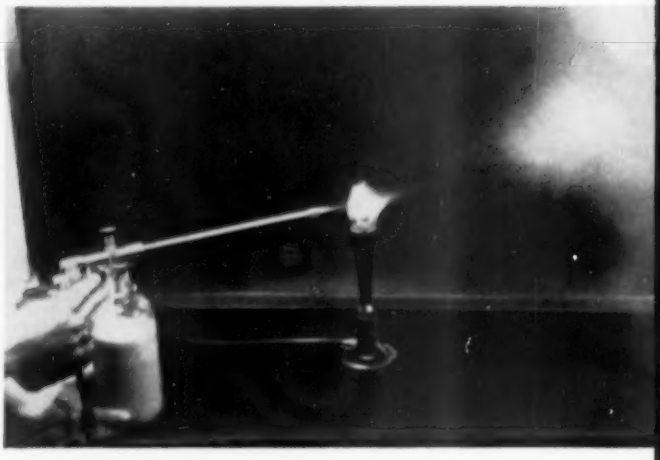
Announcing...the First

HYDRAULIC

Flame tests prove its fire-snuffing ability



This photo shows the instant combustion taking place when a conventional hydraulic oil of mineral oil type is atomized over a Bunsen burner.



In this photo, Shell Irus Fluid 902 replaces the mineral oil. Note that there is no ignition.

SHELL IRUS FLUID 902

Oil-Base fire-resistant FLUID

SHELL IRUS FLUID 902

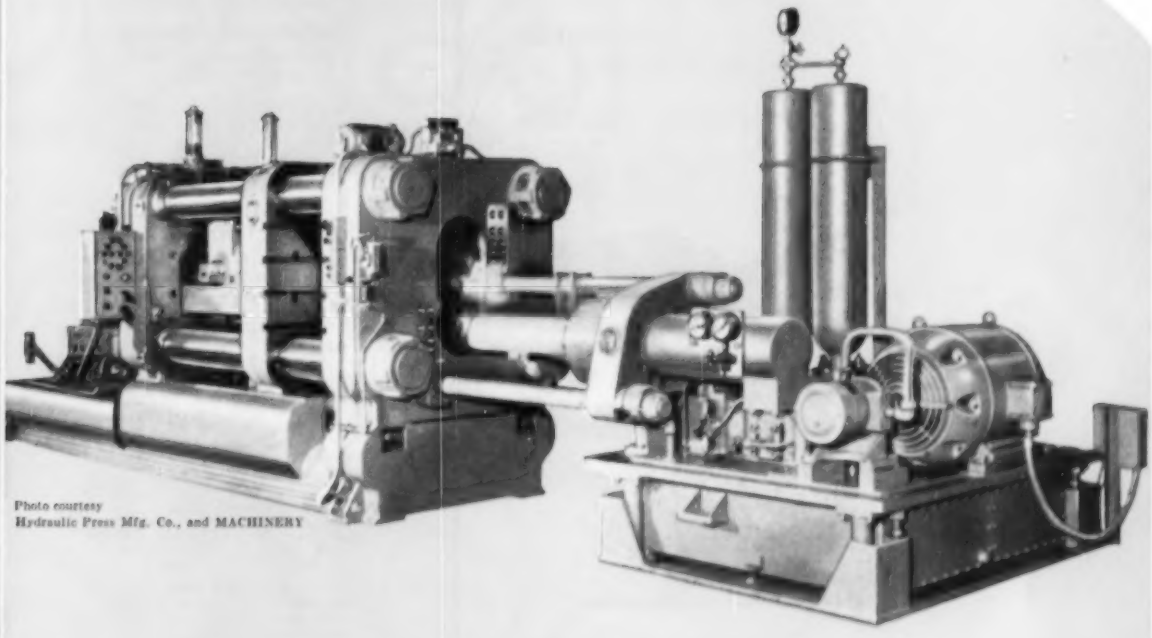


Photo courtesy
Hydraulic Press Mfg. Co., and MACHINERY

AFTER THREE YEARS of intensive research, field application and evaluation, Shell Irus Fluid 902 is now commercially available for use in industrial hydraulic systems. While its cost is far lower than other fire-resistant fluids, its performance is comparable.

No major modification of equipment is necessary. Shell Irus Fluid 902 is a special formulation containing no corrosive ingredients . . . no adverse effect on seals or fittings. It is a direct replacement for hydraulic oils now in service.

Noncorrosive, and nonrusting. Steel and copper panels immersed in Irus Fluid 902 for one week at 160°F have shown no significant signs of corrosion. Rusting has not been a problem in long-continued field tests.

This is an efficient fire-snuffing hydraulic fluid that can be widely used. Send coupon for details.

SHELL OIL COMPANY

50 WEST 50 STREET, NEW YORK 20, NEW YORK

100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

SHELL OIL COMPANY
50 West 50th St. New York 20, N. Y. or 100 Bush St. San Francisco 6, Cal.

Please send me test data and information on Shell Irus Fluid 902.

Name_____

Company_____

Address_____

(For details, use Key # V-1 on card on page 37)

More people wear

TUC-AWAYS

'cause they're more comfortable

Adjustable plastic retrax temples make 'em *fit*,
heavy-duty methacrylate lenses make 'em *safe*
. . . and they weigh hardly more than an ounce.

that's why workers wear 'em

For details, see your Authorized Eye Savers Supplier or write direct

Quality Eye Protective Equipment — *Made by the Leaders in Plastics*

WATCHEMOKET eye SAVERS

WATCHEMOKET OPTICAL CO., INC.

232 West Exchange St., PROVIDENCE 3, R. I. *In Canada: Levitt-Safety Limited, Toronto 10, Montreal 26, Winnipeg*

(For details, use Key # V-4 on card on page 37)

Editor-in-Chief
ALFRED M. BEST

Editor
HARRY De G. ARMAND

Associate Editor
RALPH P. EAMES

Editorial Assistant
PHILIP V. CARDUCCI

Make-up Editor
ROLLIN P. SILVER

Managing Editor
CHESTER M. KELLOGG

BUSINESS DEPARTMENT

Executive Vice President
ARTHUR SNYDER

General Sales Manager
FRANK R. WALDRON

Sales Manager
JAMES E. BEHNER

Circulation Manager
KARL FOURDRINIER

Production Manager
A. M. CROWLEY

Publication Office:
Columbia Turnpike, Rensselaer, N. Y.
Editorial and Advertising Offices:
BEST Building, 75 Fulton St., New York 38, N. Y.

NATIONWIDE BRANCHES

WESTERN
FRANK J. MATRE, Sales Mgr.
W. LAWRENCE HOWE, Spec. Repr.
JAMES G. BRECUNIER, Spec. Repr.
10 South La Salle Street
CHICAGO 3, ILL.

EAST CENTRAL
PAYSON H. RYAN, Vice-President
FELIX T. McCARTHY, JR., Spec. Repr.
Ingalls Building, 6 E. 4th St.
CINCINNATI 2, OHIO

NEW ENGLAND
WALTER A. SPANGLER, Manager
BRUCE MacFARLANE, Spec. Repr.
13 Stanhope Street
BOSTON 16, MASS.

EASTERN
DAVID R. BEASLEY, Spec. Repr.
ROLAND H. BURCHSTEAD, Spec. Repr.
ARTHUR A. EBERLE, Spec. Repr.
ELLIOTT SEWARD, Spec. Repr.
75 Fulton St., New York 38, N. Y.

MIDDLE ATLANTIC
HOWARD J. ADER, Manager
1208 Nelson Street
RICHMOND 26, VA.

SOUTH CENTRAL
GENE HANSELMANN, Manager
151 Lynda Drive
CHATTANOOGA 5, TENN.

SOUTHWESTERN
ROBERT S. BEGIEN, Manager
ROBERT S. BEGIEN, JR., Spec. Repr.
Oil & Gas Building, St. Paul Street
DALLAS, TEXAS

PACIFIC COAST
HAROLD F. KANE, Manager
1150 Wilshire Blvd.
LOS ANGELES 17, CAL.

Copyright 1956
Alfred M. Best Company, Inc.
75 Fulton St., New York 38, N. Y.

Trademark Registered—U. S. Patent Office

Annual Subscription $4 (two years $6)
Canadian & foreign $5 (two years $8)
Single issues 50c. Also quantity rates

Safety Maintenance and Production

Formerly "SAFETY ENGINEERING"

Volume 112, Number 3 **September, 1956**

EDITORIALS

The Eyes Have It! 7

ACCIDENT PREVENTION

Can You Buy a Safety Program? 13
by W. T. ROGERS
Why They Wear Safety Goggles in their Pockets 15
by Dr. HARRY G. BEILING
Designing the Safer Factory 22
by R. T. VAN NESS
Cool Suit for Hot Spots 27
Keeping Up with Ladder & Scaffold Developments 28
(ladder & scaffold series)
We Took the Shock out of Scoop Loading 39
by R. H. GRAVES
Free Safety Bulletins 37
New Safety Products 65

MAINTENANCE

Preventive Maintenance for the Small Plant 19
by WALTER F. KELEHER
Cool Suit for Hot Spots 27
Keeping Up with Ladder & Scaffold Developments 28
(ladder & scaffold series)
Boiler Feedwater Conditioning 33
Free Maintenance Bulletins 37
New Maintenance Products 65

INDUSTRIAL HYGIENE

Management, Medicine and the Future 43
by SAMUEL L. H. BURK
New Non-Adherent Dressing 45
(first aid series)
The Why and How of Industrial Ventilation 48
by WALTER S. SHURKIN (dust & fume control series)
Free Industrial Hygiene Bulletins 37
New Industrial Hygiene Products 65

FIRE PROTECTION

The Fire Front 55
Don't Let the Fire Get Started 57
Extinguisher for Tire Fires 59
Free Fire Protection Bulletins 37
New Fire Protection Products 65

SPECIAL DEPARTMENTS

The Future Shows 8
Production Aids Check List 10
"Safety Maintenance" Salutes 16
Free Bulletins & Catalogs 37
Reader's Free Inquiry Card 37
What's Your Problem? 38
What's the Law? 40
Achievements & Awards 53
Inside the Trade 62
What's New 65
Index to Advertisers 70

Cover picture by courtesy of Lukens Steel Co.

AMERICA'S PIONEER MAGAZINE IN ITS FIELD

SAFETY MAINTENANCE & PRODUCTION is indexed regularly by Engineering Index, Inc., New York

HILD TRANSFERABLE HEAD VACUUMS

Consult a Hild representative about your vacuum cleaner requirements. Hild offers the most complete line of transferable head vacuum cleaners in the industry.

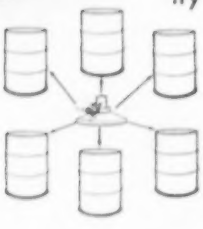
The Powerhouse Twins

MODEL 655
A two motor design for use where high speed, large volume, and high power is needed.
TRANSFERABLE HEAD
Any size hose up to 3 inch can be used.

MODEL 555
Transferable Head
Designed to use on any drum with a diameter range from 18 to 25 inches.
A POWERHOUSE TWIN
Motor removable and can be used for blowing and special clean-up jobs.

MODEL 455
Inside bag vacuum cleaner. Hospital quiet. Designed to give you the service of 4 vacuum cleaners for little more than the price of one.

Hild Vacuum Cleaners, Scrubbers and Polishers have served industry for 27 years.



What is your pickup or blowing problem?

● WATER ● OIL ● COOLANT ● SAW DUST
● WOOD CHIPS ● METAL CHIPS ● METAL FILINGS
● POWDER ● SLUDGE ● DUST ● BOILER CLEANOUT
● SMALL RAG SCRAPS ● METAL FLAKES AND SCALE

A HILD TRANSFERABLE HEAD VACUUM CAN SOLVE IT

Convertible to Any Size Vacuum Tank

HILD FLOOR MACHINE CO.
740 WEST WASHINGTON BLVD. • CHICAGO 6, ILLINOIS

BRANCH OFFICES:
250 EAST 43RD STREET — NEW YORK 17, NEW YORK
4271 WEST 3RD AVENUE — LOS ANGELES 5, CALIFORNIA
2465 WEST GRAND RIVER — DETROIT MICHIGAN

Export Division:
10406 South Western Avenue, Chicago 43, Illinois

HILD FLOOR MACHINE CO. SMP 9-56
740 West Washington Blvd., Chicago 6, Illinois

GENTLEMEN:
Please send me without cost or obligation, complete information on Hild Scrubbers and Polishers, Hild Transferable Head Vacuum Cleaners, Hild Explosion-Proof Vacuums.

NAME

ADDRESS

CITY ZONE STATE

(For details, use Key # V-5 on card on page 37)

ENTIRE CONTENTS COPYRIGHT, 1956, BY ALFRED M. BEST COMPANY, INC. ALL RIGHTS RESERVED

it's SAFE to say

● THE EYES HAVE IT!

They will have it—vision, that is—only so long as management does not try to discharge its obligation to protect the eyes of the working staff merely by ordering goggles or other eye safeguards and letting it go at that.

In one year alone, the use of eye protective devices in our nation's industrial plants has saved the vision of thousands of employees with a consequent financial saving running into the millions of dollars. Naturally, this does not take into account the prevention of a tragedy compared with which the loss of any other of the senses pales into the unimportant.

According to estimates based upon other years, 1956 will be a tragic year for at least 27,000 Americans. During this year, that number of men, women and children in our country will become blind; of course, not because of industrial accidents alone.

The month of September has been designated "Sight-Saving Month" by the National Society for the Prevention of Blindness, a completely non-profit agency which obtains its financial support from 50,000 members and contributors from all parts of the country. As sponsors of the September campaign dedicated to emphasizing the need for eyesight conservation, the Society is the guiding force behind the Wise Owl Club, which limits its enrollment exclusively to those men and women who actually have cheated the tragedy of blindness by wearing eye safeguards at the time of an accident which **could** have destroyed eyesight.

Handicapped persons can walk with the aid of artificial limbs; many actually have been taught to dance and go up and down stairways. Countless others can eat and sustain themselves with artificial teeth and still others are earning their livelihood through the use of artificial hands.

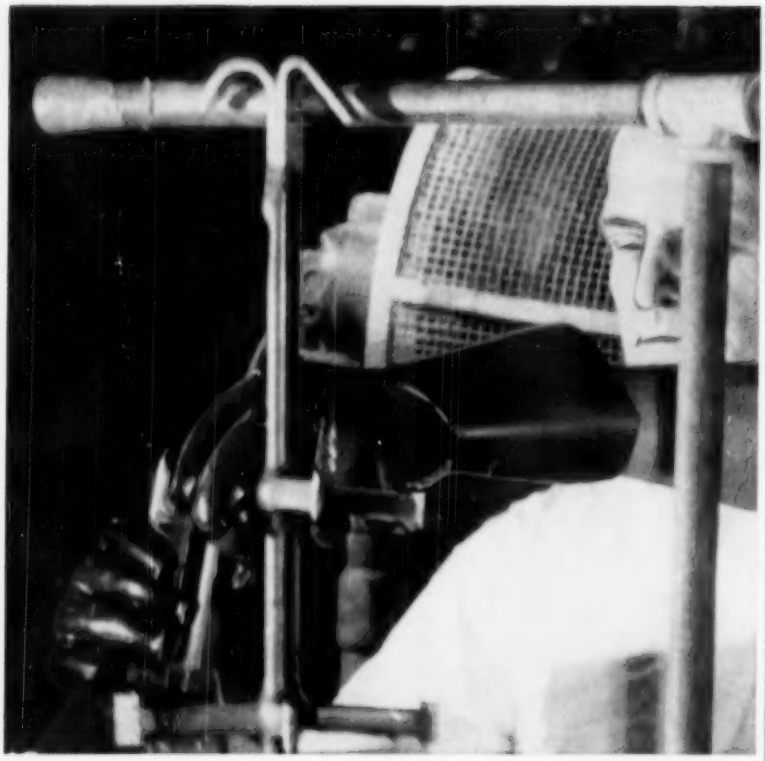
But to date, no one has invented an artificial eye which permits the wearer to see!

The most generous compensation plan in effect in any of the forty-eight states is small payment for vision loss, for which there is NO compensation.

Enlightened managements in many lines of industry have put into effect mandatory rules requiring the visitor as well as the employee to don an eye protective device when confronted by the slightest danger. This rule should be enforced with greater vigor so that, perhaps after a single warning, the offending employee merits instant discharge which conceivably could be the greatest favor ever granted him.

If taking care of the eyes means constant vigilance at work, at play and while "doing it yourself" at home, then September's "Sight-Saving Month" should mark the beginning of "Sight-Saving **Year.**"

The Blindness Prevention Society is at the disposal of all industry to help safeguard nature's precious gift of eyesight. H.A.



Edmont now offers work gloves coated with

FLEXIBLE NEOPRENE

Flexible as plastic but with the all-around toughness of Edmont Neox (reinforced neoprene)

"Flexible Neox" is a newly improved Edmont glove coating of DuPont neoprene, reinforced with special additives. Long noted for its toughness, far exceeding ordinary neoprene, it is now equally superior in flexibility.

No other work gloves have such all-around resistance to snagging, cutting, abrasion, heat, acids, caustics, solvents and degreasants. No other neoprene coated glove is so flexible and popular with workmen. And, unlike many work gloves, these characteristics are *always uniform*, due to Edmont's complete laboratory control.

FREE TEST OFFER TO LISTED FIRMS: Flexible Neox is the latest of many industrial glove coatings we have developed for different work applications. Tell us your operation, materials handled, temperature condition. From our more than 50 types — palm coated or fully coated — we will recommend glove and coating that best fit the job and supply samples for on-the-job testing.

Edmont Manufacturing Co., 1256 Walnut St., Coshocton, O.

Leading industrial distributors supply Edmont gloves.
In Canada write Mine Safety Appliances, Toronto.

Edmont

Edmont JOB-FITTED GLOVES

(For details, use Key # Y-6 on card on page 37)

York Harbor, Me. *September 13–14*

Twenty-Ninth Annual Maine State Safety Conference (Marshall House). Arthur F. Minchin, Secretary, Department of Labor & Industry, State House, Augusta, Me.

New York, N. Y. *October 14–16*

First International Sanitation Maintenance Show & Conference (New York Coliseum). William S. Orkin, managing director, Orkin Exposition Management, 19 W. 44th St., New York, N. Y.

Chicago, Ill. *October 22–26*

Forty-Fourth National Safety Congress and Exposition (Conrad Hilton Hotel). R. L. Forney, Secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

Columbia, S. C. *November 8–9*

Nineteenth Annual South Carolina Accident-Prevention Conference (Jefferson Hotel). J. D. Watson, Jr., Safety Engineer, South Carolina Industrial Commission, Columbia, S. C.

Atlantic City, N. J. *November 12–16*

Eighty-Fourth Annual Meeting of the American Public Health Association (Convention Hall). Information: American Public Health Association, 1790 Broadway, New York, N. Y.

Fort Wayne, Ind. *March 19–20*

Fourteenth Annual Northeastern Indiana Safety Conference and Exposition (Chamber of Commerce Building). Ivan A. Martin, manager, Safety Council, Ft. Wayne Chamber of Commerce, Ft. Wayne 2, Ind.

IMMEDIATE SHIPMENT!

Now... GREATLY EXPANDED COVERAGE of

Safety and Maintenance Products and Equipment

- listed
- described
- classified
- illustrated

in the

NEW '56-'57

BEST'S SAFETY & MAINTENANCE DIRECTORY

WHAT safety and maintenance products to use...
WHEN to use them...
HOW to use them...
WHERE to buy them...

THE ONLY WORK OF ITS KIND

- COMPLETE
- CONCISE
- ACCURATE
- UNBIASED
- AUTHORITATIVE

ALFRED M. BEST COMPANY INC.
75 FULTON STREET • NEW YORK 38, N. Y.
ATLANTA • BOSTON • CHATTANOOGA • CHICAGO • CINCINNATI • DALLAS • LOS ANGELES

(For details, use Key # V-7 on card on page 37)

HE CAN wreck YOUR BUILDING

Mr. Sparks is his name— destruction is his game.

Sired by static electricity, he strikes without warning. In the presence of gases, vapors, chemicals or dusts, he can ignite a deadly explosion.

FREE FOLDER

tells how to protect property and lives

Our new folder, "One little Spark", explains why conductivity in your floors ends the menace of static explosions.

It goes further, too. Tells you how to keep from *losing* conductivity by adopting proper maintenance methods and materials. How to stay on the safe side of NFPA Code #56 at all times. It's "must" reading for administrators of hospitals, industrial and ordnance plants, fuel depots, warehouses, laboratories.

Fill out and mail coupon today for your Free copy.

LEGGE SYSTEM of Static Floor Maintenance

Walter G. LEGGE Company, Inc.
Dept. F-9, 101 Park Avenue
New York 17, N. Y.
Branch offices in principal cities.
In Toronto—J. W. Turner Co.

☐ Send me a Free copy of your folder, "One little Spark"

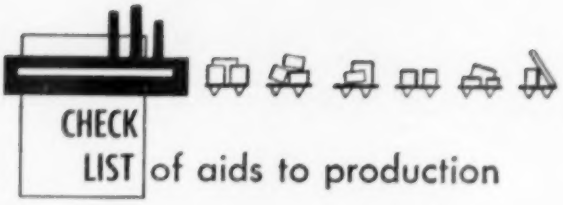
Name_____

Firm_____

Address_____

City_____ Zone____ State_____

(Use Key # V-8 on Inquiry Card on page 371)



of aids to production

Through Safety—

Safety Goggles 15
Awards 16
Hazard Recognition 22
Insulating Suits 27
Improved Ladder Shoes 28
Ladder Guard Rail 29
Ladder Leveler 29
Fall Safety Harness 30
Platform for Stepladder 32
Truck Load Cushioner 39
Aisle Markers 65
Clip-On Safety Lenses 65
Floor Machine Stairs Ramp 66
Portable Power Saw 66
Drum Cradle Truck 66
Truck Back-Up Alarm 67
Safety Equipment Sanitizer 67
Coal Dusting Applicator 67
Static-Conductive Shoes 68
Traffic Control Device 68
Solvent Vapor Degreaser 69
Ladder-Cart 69
Head-Mounted Magnifier 69

Through Maintenance—

Maintenance Card System 19
Hot Suits 27
Aluminum Stepladder 28
Stair Stand 28
Platform Ladder 29
Stock Room Servicer 29
Maintenance Lift 30
Maintenance Platform Ladder 30
Restyled Aluminum Stages 31
Triple-Duty Stepladder 31
Truck Maintenance-Towers 32
Hydro-Electric Work Tower 32
Heavy-Duty Stepladder 32
Beam Scaffold 32
Feedwater Conditioner 33
Floor Machine Stairs Ramp 66
Stain & Rust Remover 67
Airless Paint Spray Unit 68

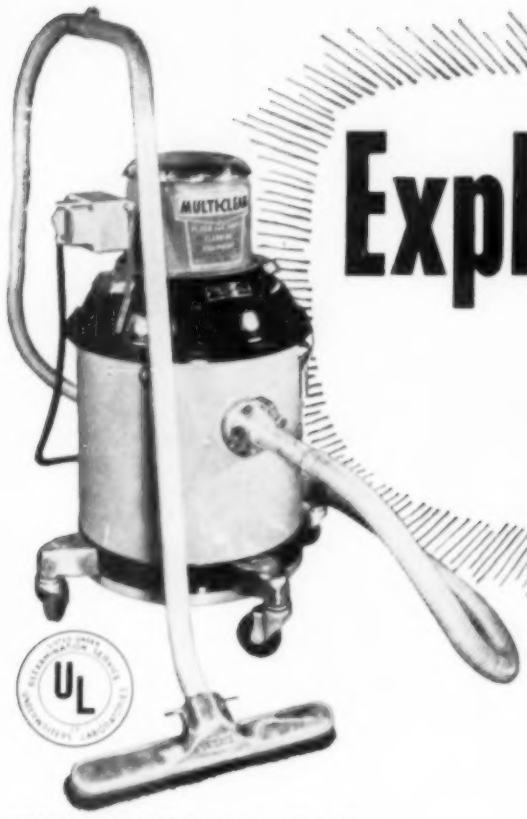
Through Industrial Hygiene—

Non-Adherent Dressing 45
Ventilation Systems 48
Industrial Ambulance 65
Portable Resuscitator 66
Equipment Sanitizer 67
Airless Paint Spray Unit 68
Waterless Hand Cleaner 68

Through Fire Protection—

Anti-Heat Suits 27
Fire Training 57
Tire Fire Extinguisher 59
Fire-Resistant Hydraulic Fluid 65
Manual Fire Alarm System 66
Coal Wet Dust Applicator 67
Lightweight Fire Hose 67
Static-Conductive Shoes 68
Explosion-Proof Hand Lamp 69
Tiny Fire Alarm 69

Explosion-Proof Twins!



COMPLETELY Explosion-Proof!

Yes, this is the *first* industrial vacuum cleaner which combines portability, efficiency, and *complete safety*.

The MULTI-CLEAN H-500 EXPLOSION-PROOF Vac has been tested by UL and approved for use in Class I, Group D and Class 2, Group G locations.

This now means that you can use this wet-dry vac amid explosive gases, vapors, dust, and in dozens of other situations where danger of explosion or fire had previously made use of a vac too risky.

It's ideal for cleaning floors, walls, overhead pipe, machinery or stock bins where there is grease, chemicals or other flammable materials. And since it works equally well for wet or dry pickup, it's just the thing for cleaning combustible material from storage tanks.

Mills and elevators, chemical plants, petroleum refineries, gas plants, and distilleries are just a few of the locations where this new vac is especially suited.

For more information on the H-500, its powerful ⅞ hp totally enclosed motor, 100% bronze or aluminum construction, and spark-proof electrical fittings . . . see your MULTI-CLEAN Distributor or mail coupon below.

The MULTI-CLEAN EXPLOSION-PROOF Floor Machine, shown below, is engineered for scrubbing, cleaning, buffing, and polishing in presence of combustible gases, liquids, and dust. The completely-enclosed, explosion-proof motor, heavy duty safety switch and connection box are all approved by Underwriters Laboratories, Inc.

Available in 14" and 16" sizes. Both can be equipped with a 3-gallon solution tank and channel feed brush for mechanized scrubbing.

Multi-Clean Explosion-Proof Floor Machine

MULTI-CLEAN Products, Inc., Dept. S... P. (4-56)
2277 Ford Parkway, St. Paul 1, Minnesota

Gentlemen: Send me complete information on the:

- ☐ Explosion-Proof Vacuum Cleaner
- ☐ Explosion-Proof Floor Machines

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____

Titan

can take it !

Dramatic proof. With its unique bridge and rivet construction, Titan easily supports 54 lbs. without distortion. But—learn *all* about amazing Titan; write for 8-page folder:
Bausch & Lomb Optical Co.,
90509 Smith St., Rochester 2, N. Y.

BAUSCH & LOMB
SINCE 1853

(For details, use Key # V-10 on card on page 37)

CAN YOU BUY A SAFETY PROGRAM?

with active support from management...

"how to" guidance is available for all phases at all stages...

BUT...

you can shop the market for specific components to fill your individual bill of safety needs and...

by **W. T. ROGERS**
Safety Director
Ebasco Services Incorporated

The answer is NO! You cannot buy a safety program any more than you can buy loyalty, a good attitude or efficient operation. Furthermore you cannot copy, borrow or steal your neighbor's safety program and expect it to work in your establishment.

You can, however, buy advice or consulting services which will show you how and help you to install a safety program suited to your own requirements. You can also get such assistance in reviewing, revamping, and revitalizing your existing program. You can also get continuing assistance to see that your program, once installed, will continue to operate in line with your changing requirements.

Now, the reason you cannot buy, beg or steal a safety program is because a safety program is too complex, involves too many factors, and depends on too many conditions which can never be the same in different companies. You have differences in organization, personalities, habits, tradition, geography, weather, equipment, public relations, and employee relations, to mention only a few. You may find the best safety program in the world working smoothly in one organization. Try to take this complete and perfect program and adopt it to another organization; but it won't work in this new situation.

Elements of Program

However, while the exact details of a safety program may vary, there are several fundamental elements common to all successful safety programs. These can be listed as follows:

Management's Continued Active Interest and Direction of the Safety Program (the priceless ingredient): It is not enough that management recognizes the importance of and supports the safety program, it must lead it and give it direction in all echelons.

Engineering, Design and Construction: Safety begins on the drawing board. Emphasis must be placed on the design, construction and maintenance of a safe plant. Safety should be a major consideration in the purchase of tools and equipment. All necessary protective equipment and devices must be provided.

Personnel Practices: Employment and advancement policies must be geared to safety requirements. Good men must be provided and trained. Good working conditions must prevail, and welfare programs be designed to improve morale and promote safety.

Training: Job analyses should be the basis of training men in improved job methods. Training men for advancement, training supervision in effective leadership as part of a general safety education to improve attitudes and the will to work safely should be the objective of all safety training programs.

Supervision: Because safety must be the responsibility of supervisors, supervision must be selected with an eye to safety qualifications. Supervisors must be trained for leadership, given full responsibility and backed up in their policies and decisions.

Inspection: An inspection system must be established to detect hazardous conditions, to prevent

fires and explosions and to observe unsafe practices. Follow-up corrective procedures are essential to a well-rounded safety program.

Investigation: A thorough, well-administered accident investigation procedure is a "must" in any well-organized safety program. Facts must be disclosed which will aid in preventing similar accidents and fix responsibility for the accident whether it be management, supervision or men.

The degree to which these elements plus other procedures and devices will be used in any situation is what must be determined. This can best be decided by an analysis and survey—preferably by an outside source—a consultant, who can give an unbiased, unprejudiced opinion.

Safety Survey Factors

A safety survey should consist of an analysis of accident and claim costs and comparisons with other like or similar companies or the industry of which it is a part; analysis of accident data, causes, locations, environmental conditions, etc.; review of safety program, if any; review of organization and personnel; interview with executives, supervisors and employees; actual field observations and "sample" inspections. If required, a detailed inspection of physical property from the fire protection and safety standpoint could be made.

Safety's Price Tag

The question is often asked: How much should be spent on safety? An analysis of safety budgets of companies shows a wide divergence of unit expense for safety—depending on the size of the safety department, the functions performed and the allocation of charges for safety equipment, educational materials, etc. With respect to functions, for example, some safety departments will have a number of engineers and inspectors, others in companies of approximately the same size will operate with one safety director and a secretary—the inspections and other safety functions being performed by line personnel in the various operating departments.

In determining the cost of the safety department or in "justifying" the cost, some executives will figure somewhat as follows: "Our accident costs have averaged X dollars over the past five years. If we put in a safety program, we should be able to cut the cost of accidents by Y dollars. We can afford to spend about one-half Y dollars for safety." This has proven to be not too far wrong, for a number of leading executives have publicly stated that they get at least two dollars back for every dollar spent on safety. This, however, is a very narrow and limited view, for on the basis of cost of accidents alone the following must be considered:

(a) Accident costs to employees usually do not take into consideration the hidden or indirect costs.

(b) What is the cost in loss of production due to accidents?

(c) What would be the cost of a major disaster or catastrophe?

(d) What is the cost in good will resulting from interruption of production or service, or injury and damage to the public?

In view of the substantial benefits resulting from safety work, reaching into all phases of the company's operations and the importance of safety, an entirely new concept must be established in evaluating the cost of this activity. In calculating what would be a reasonable expenditure for safety work in a company the questions in Table I must be answered:

It will be noted that the first five questions have to do with the **negative** aspects of safety; preventing accidents, minimizing costs and avoiding ill will. The other five questions point up the positive aspects of safety; **promoting** safety as a way of life, improving skills and job performance, shaping attitudes and improving relationships with employees, customers and the public.

From an address presented at the 1956 Greater New York Safety Convention.

Table I: Factors for Deciding How Much to Spend for Safety Work

1. How much does the company now spend annually for injuries and damages (all costs of employee and public injuries, damages to equipment and property, and interruption of production and service)?
2. What could a serious accident, calamity or catastrophe cost above and beyond that part covered by insurance?
3. What is the annual cost of the company's claim department and legal service devoted to investigations, settlements, suits, etc., as a result of accidents?
4. What is the annual cost of operating errors (accidents)?
5. What is the cost to the company in terms of lowered employee morale and public condemnation resulting from a poor accident record?
6. How much is being spent for personnel administration and employees' welfare—how much of this activity is credited to safety?
7. How much is being spent to improve employee relations and develop employee morale—how much of this activity can be credited to safety?
8. How much is being spent to improve public relations—how much of this activity can be credited to safety?
9. How much is being spent to improve job performance through training, better work methods, etc.—how much of this activity can be credited to safety?
10. How much does the company spend in being a good citizen—supporting local, state and national movements for the benefit of the country and community—how much of this activity can be credited to safety?

Safety Engineer Available

Profit Conscious! Experienced all phases employee accident prevention, safety programs and administration. Presently employed. Will relocate. Write to: Box 741, c/o Safety Maintenance, 75 Fulton St., New York 38, N. Y.

Why They Wear Their Safety Goggles In Their Pockets

by **Dr. HARRY G. BEILING**
Chairman
Occupational Vision Committee
American Optometric Association

One of the most tragic and puzzling questions after almost every eye injury in industry is, "Why didn't I wear my safety glasses?"

Most employees **know** when they should wear safety glasses; but apparently preaching safety hasn't solved the problem. There were more than 75,000 disabling eye injuries in 1955, and almost 100 percent of them could have been prevented, usually by the simple precaution of wearing safety glasses when needed.

How the safety glasses fit may be the key to this major unsolved problem of eye safety—why safety glasses are worn in the pocket.

"Your vision is as personal as your fingerprints," according to the American Optometric Association which has made a study of eye accident cases. In plant after plant it was found that more personal attention to fitting led to near perfect records of wear when needed.

The conclusion of vision specialists and safety directors after careful study was, "If they fit him, he will wear them."

If a person needs no refractive correction, his safety glasses will have plain lenses. Discomfort, however, can come from a wide variety of fitting problems. Do the glasses rest properly on the nose? Are the temples properly bent at the sides of the head and back of the ears? Do the lens centers match pupil centers? Does he keep the lenses clean? Maybe the color or aesthetic appearance of frames is a psychological factor.

Regardless of the eye safety program in your plant, these are partly personal responsibilities of the individual employee. The fitting problems should be worked out in detail with the examiner.

Periodic checkups are important. Maybe his vision has changed as it does for everyone, especially those over 40. He may now need corrective lenses, or a different correction from the one he got a year or more ago. If so, he probably finds his present goggles unsatisfactory.

What are some of the requirements for proper fitting of corrective-protective goggles?

The requirements depend not only on the employee's very personal vision, but also on his job—the visual demands and the hazards of it. You have such questions as those which follow.

What is the working distance—8, 16, or 30 inches, or 20 feet? If he needs corrective lenses in his safety goggles, this is a crucial question. Maybe he needs bifocals or trifocals to adapt his vision to more than one critical working distance. Here one of the most common mistakes is to assume that the prescription for reading glasses may be satisfactory for the job. Reading glasses can make a safe crane operator dangerous, and they may be nearly worthless to anyone working on fine details at 8 or 10 inches.

Just as in picture taking, a lens that sharpens focus at 16 inches blurs focus at about 30 inches or any greater distance, and vice versa. Each lens, then, must fit the refractive requirements of the

eye and job visual requirements.

What is the position of the task —eye level, high, low, right or left?

Usually the close range segment of bifocals is at the bottom. If a critical visual task is above eye level, it should be at the top to avoid strain and fatigue. Unless seeing is easy and comfortable with safety glasses, a person is likely to remove them, and that's how accidental injuries occur.

Does the frame interfere with peripheral vision—to the sides, up or down? If it does, he may unconsciously feel safer or more comfortable without safety glasses. Better fitting is the answer.

What are the hazards of the job? Flying particles such as in metal working plants are the most common hazards. Heat-toughened lenses that will not shatter protect the eyes from this hazard. If an employee needs considerable visual correction to see well, the hardened lenses may be too heavy, and the safety glasses may be tiresome. Lighter plastic lenses may solve that problem.

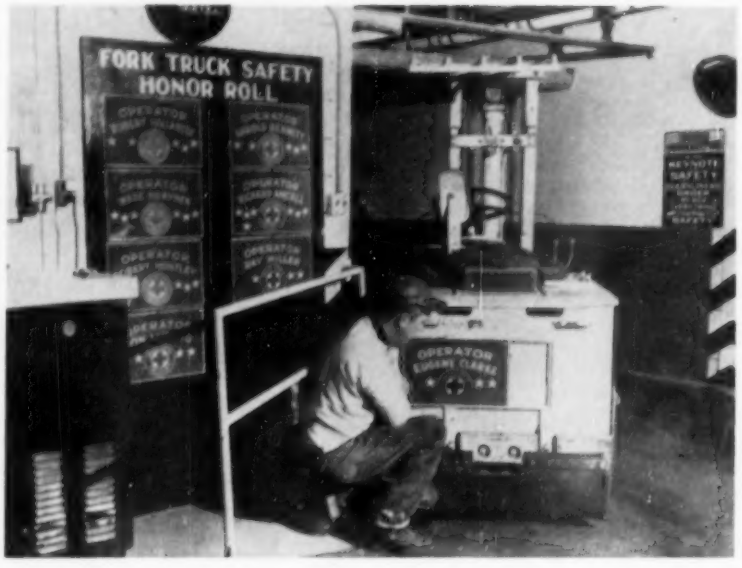
Harmful light, such as from welding, is screened out by a wide variety of special lenses. But here there must be caution not to shut out too much light for clear perception. Lens quality and type are important.

With the corrective-protective glasses, the needs for re-checking and maintenance care are particularly important. Frames get bent, spoiling the alignment of lenses with pupils. If a person is gaining weight, the frames may need readjustment to fit the face and head. Most of all, vision may be changing and the employee may need a different correction—a normal and not alarming development in 95 cases out of 100.

These are just a few of the factors in proper fitting. The examiner takes many others into consideration when he prescribes and fits safety glasses, but he needs the employee's cooperation.

One additional point needs emphasis. That is the relationship of vision itself to safety. Better vision is one of the best means of preventing all types of accidents. With the aid of modern science almost everyone can see adequately for his job. The better he sees the easier and safer his job is.

A SAFETY IDEA



Gold Star Safety Program

A unique safety program built around personalized, "safe-driver" license plates for fork truck operators, has resulted in accident-free truck operation for the Moorman Manufacturing Company, Quincy, Illinois.

In its job of feed processor, Moorman uses a fleet of twelve fork trucks to handle, palletize and store separately 55 different items. On the back of every truck is a plate with the operator's name and several gold stars. Each star signifies one year of accident-free operation for the driver.

Moorman's traffic safety commission, headed by the plant superintendent, determines the eligibility of individual truck operators for star awards. The awards are presented each year by E. H. Wilson, president of the company, before a plant-wide meeting. The drivers, zealous of their record, are alert for good suggestions to safeguard that record.

Behind the awards lies a basic and vigorous safety plan. The traffic safety commission has compiled and edited an official company rule book for truck operators. It also maintains a driver training program and investigates any traffic hazards reported by the men.

Between them, Moorman's twelve present drivers have won 78 stars. The company itself has not experienced a lost-time accident in 82 years.

Picture by courtesy of Clark Equipment Co.

For a copy of booklet described on opposite page, use Key # V-11 on card on page 37.

Pittsburgh COLOR DYNAMICS®

improves productive efficiency as operators are helped to see their work better

Properly engineered colors reduce eye fatigue and cut down accidents in Mt. Wolf Plant of the American Wire Fabrics Corp.

ANOTHER impressive example how Pittsburgh COLOR DYNAMICS improves productive efficiency and reduces danger of time-loss accidents by lessening eye fatigue among employees is the Mt. Wolf, Pennsylvania, plant of the American Wire Fabrics Corporation.

This plant, a subsidiary of The Colorado Fuel and Iron Corporation, one of the nation's leading steel producers and fabricators, manufactures insect wire screening and industrial cloth.

The benefits which derive from the COLOR DYNAMICS system of painting are best expressed in this comment of B. L. Weaver, American Wire Fabrics Corporation executive vice president:

"By the use of focal colors on working parts of our machines in contrast to eye-rest colors on stationary parts, operators see their work better. This reduces eye strain considerably. As eye strain is one of the chief causes of physical fatigue, we have found that both the quantity and quality of production are improved. Safety colors on hazard areas reduce danger of accidents.

"The clean, well-ordered appearance of our work areas maintains high morale among our employees and a friendly relationship between working force and management. It also makes our operators take pride in their environment. They help to keep their surroundings clean, simplifying housekeeping.

"We regard these benefits as a highly satisfactory plus, as painting the COLOR DYNAMICS way has cost us no more than conventional maintenance painting."

How You Can Get an Engineered Color Study of Your Plant — FREE

Why not test the practical value of COLOR NAMICS in your plant—on a machine or two, in a whole department? Send for our free prehensively illustrated book which explains v you can make use of this modern painting system simply and easily. Better still, call your nearest Pittsburgh Plate Glass Company branch and ask to have a representative give you a detailed engineered color study of your plant, without cost or obligation. Or mail coupon at right.

Send for a Copy of This FREE Book

Pittsburgh Plate Glass Co., Paint Div.,
Department SM-86, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your booklet "COLOR DYNAMICS."

☐ Please have your representative call for a COLOR DYNAMICS survey without obligation on our part.

Name_____

Street_____

City_____ County_____ State_____

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

eye and job visual requirements.

What is the position of the task —eye level, high, low, right or left?

Usually the close range segment of bifocals is at the bottom. If a critical visual task is above eye level, it should be at the top to avoid strain and fatigue. Unless seeing is easy and comfortable with safety glasses, a person is likely to remove them, and that's how accidental injuries occur.

Does the frame interfere with peripheral vision—to the sides, up or down? If it does, he may unconsciously feel safer or more comfortable without safety glasses. Better fitting is the answer.

What are the hazards of the job? Flying particles such as in metal working plants are the most common hazards. Heat-toughened lenses that will not shatter protect the eyes from this hazard. If an employee needs considerable visual correction to see well, the hardened lenses may be too heavy, and the safety glasses may be tiresome. Lighter plastic lenses may solve that problem.

Harmful light, such as from welding, is screened out by a wide variety of special lenses. But here there must be caution not to shut out too much light for clear perception. Lens quality and type are important.

With the corrective-protective glasses, the needs for re-checking and maintenance care are particularly important. Frames get bent, spoiling the alignment of lenses with pupils. If a person is gaining weight, the frames may need readjustment to fit the face and head. Most of all, vision may be changing and the employee may need a different correction—a normal and not alarming development in 95 cases out of 100.

These are just a few of the factors in proper fitting. The examiner takes many others into consideration when he prescribes and fits safety glasses, but he needs the employee's cooperation.

One additional point needs emphasis. That is the relationship of vision itself to safety. Better vision is one of the best means of preventing all types of accidents. With the aid of modern science almost everyone can see adequately for his job. The better he sees the easier and safer his job is.

A SAFETY IDEA

Gold Star Safety Program

A unique safety program built around personalized, "safe-driver" license plates for fork truck operators, has resulted in accident-free truck operation for the Moorman Manufacturing Company, Quincy, Illinois.

In its job of feed processor, Moorman uses a fleet of twelve fork trucks to handle, palletize and store separately 55 different items. On the back of every truck is a plate with the operator's name and several gold stars. Each star signifies one year of accident-free operation for the driver.

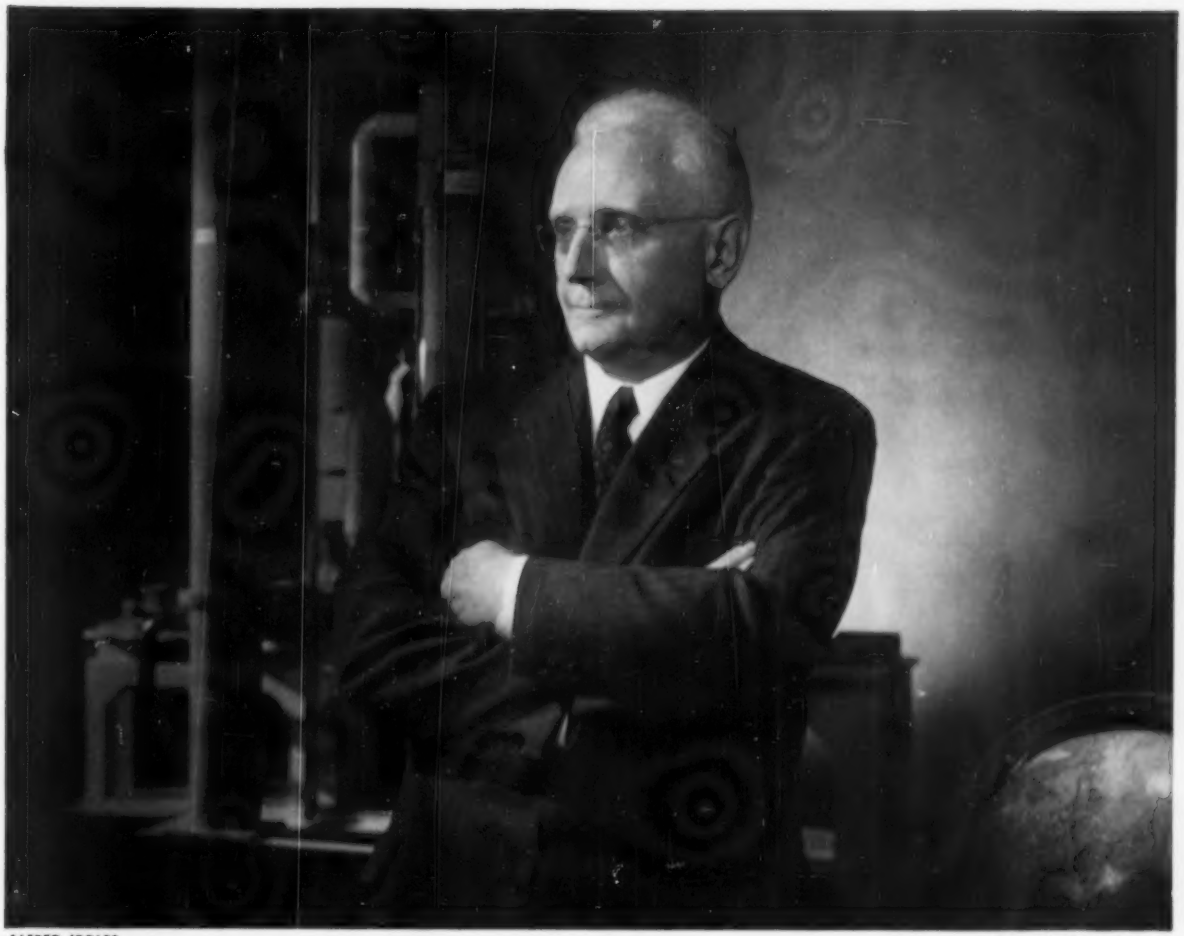
Moorman's traffic safety commission, headed by the plant superintendent, determines the eligibility of individual truck operators for star awards. The awards are presented each year by E. H. Wilson, president of the company, before a plant-wide meeting. The drivers, zealous of their record, are alert for good suggestions to safeguard that record.

Behind the awards lies a basic and vigorous safety plan. The traffic safety commission has compiled and edited an official company rule book for truck operators. It also maintains a driver training program and investigates any traffic hazards reported by the men.

Between them, Moorman's twelve present drivers have won 78 stars. The company itself has not experienced a lost-time accident in 82 years.

Picture by courtesy of Clark Equipment Co.

For a copy of booklet described on opposite page, use Key # V-11 on card on page 37. →



ALFRED IDDLES

Portrait by Fabian Bachrach

"...11,000, or 70% of Our Employees Are Buying U.S. Savings Bonds Regularly..."

"The Payroll Savings Plan, a truly 'All American' thrift program has been steadily winning employee approval all over the country. Employees of Babcock & Wilcox are an example of this fact.

"As the result of a recent campaign nearly 11,000 or 70% of our employees are now buying U. S. Savings Bonds regularly on the automatic Payroll Savings Plan. They are cultivating habits of thrift and at the same time doing their share in helping to keep our economy on a sound basis. This fine program deserves strong support by every company."

ALFRED IDDLES, ***President***
The Babcock & Wilcox Company

The campaign to which Mr. Iddles refers was a simple, person to person canvass that put a Payroll Savings Application Blank in the hands of *every* B & W employee. B & W employees did the rest. Your State Sales Director will help you build *your* Payroll Savings Plan. Phone, wire or write to: Savings Bond Division, U.S. Treasury Department, Washington 25, D. C.

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

SAFETY MAINTENANCE

Pittsburgh COLOR DYNAMICS®

improves productive efficiency as operators are helped to see their work better

Properly engineered colors reduce eye fatigue and cut down accidents in Mt. Wolf Plant of the American Wire Fabrics Corp.

ANOTHER impressive example how Pittsburgh COLOR DYNAMICS improves productive efficiency and reduces danger of time-loss accidents by lessening eye fatigue among employees is the Mt. Wolf, Pennsylvania, plant of the American Wire Fabrics Corporation.

This plant, a subsidiary of The Colorado Fuel and Iron Corporation, one of the nation's leading steel producers and fabricators, manufactures insect wire screening and industrial cloth.

The benefits which derive from the COLOR DYNAMICS system of painting are best expressed in this comment of B. L. Weaver, American Wire Fabrics Corporation executive vice president:

"By the use of focal colors on working parts of our machines in contrast to eye-rest colors on stationary parts, operators see their work better. This reduces eye strain considerably. As eye strain is one of the chief causes of physical fatigue, we have found that both the quantity and quality of production are improved. Safety colors on hazard areas reduce danger of accidents.

"The clean, well-ordered appearance of our work areas maintains high morale among our employees and a friendly relationship between working force and management. It also makes our operators take pride in their environment. They help to keep their surroundings clean, simplifying housekeeping.

"We regard these benefits as a highly satisfactory plus, as painting the COLOR DYNAMICS way has cost us no more than conventional maintenance painting."

How You Can Get an Engineered Color Study of Your Plant — FREE

• Why not test the practical value of COLOR DYNAMICS in your plant—on a machine or two, or in a whole department? Send for our free comprehensively illustrated book which explains how you can make use of this modern painting system simply and easily. Better still, call your nearest Pittsburgh Plate Glass Company branch and ask to have a representative give you a detailed engineered color study of your plant, without cost or obligation. Or mail coupon at right.

Send for a Copy of This FREE Book

Pittsburgh Plate Glass Co., Paint Div., Department SM-90, Pittsburgh 22, Pa.

☐ Please send me a FREE copy of your booklet "COLOR DYNAMICS."

☐ Please have your representative call for a COLOR DYNAMICS survey without obligation on our part.

Name_____

Street_____

City_____ County_____ State_____

PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

PREVENTIVE MAINTENANCE FOR THE SMALL PLANT

by **WALTER F. KELEHER**
Staff Engineer
Joseph M. Cook and Staff,
Industrial Engineers
Philadelphia, Pa.

Preventive Maintenance is that phase of an over-all maintenance program which has to do with the discovery and repair of defects in equipment **before** a breakdown occurs. It consists, chiefly, of periodic inspection, proper lubrication, good housekeeping and eternal vigilance. Preventive maintenance has received a great deal of attention and study in recent years because it is a proven way to reduce maintenance costs. If breakdowns in your plant have, in the past, been remedied on an emergency basis, then Preventive Maintenance will save you money.

You are very probably carrying on some form of preventive maintenance now. For example, if you drive an automobile, you regularly take it to a service station for a checkup. Or, if you have motors in your plant, you have them lubricated on schedule. You do these things because you know that if you don't, your car will eventually break down; that the motor in your plant will burn out. The result will be inconvenience and lost time, and repairs that would be more expensive than the cost of keeping the equipment in satisfactory condition.

In much the same way that you decide to have your car overhauled every 5,000 or 10,000 miles, you should be able to decide, from a record card, approximately when the various pieces of equipment in your plant will need attention. You can do this regardless of the size of your plant, with little extra clerical work, and probably with most of the same forms you are now using.

This, basically, is the theory underlying all preventive maintenance: tabulate your own experience and the recommendations of the equipment manufacturer to set up schedules to **anticipate** repairs, rather than to make them after a piece of equipment fails. By anticipating repairs, you can do them in an orderly and economical manner, rather than on an expensive, emergency basis.

Before a program of preventive maintenance is started, you should make sure your plant and equipment are in good condition. If your maintenance people are spending all of their time at present in repairing breakdowns, it is obvious that they will have no time to spend on preventive maintenance. Once the condition of the plant and equipment has been improved to a desired operating level, preventive maintenance is a proven way of keeping them in condition at a minimum of cost.

A Preventive Maintenance Program should result in four accomplishments for you:

1. Reduce the number of emergency breakdowns.
2. Reduce loss of production due to shutting down equipment for repairs.
3. Reduce the rate of depreciation of buildings and equipment.
4. Spread maintenance costs more evenly across the year.

A chemical plant in Philadelphia is a good example. It started a Preventive Maintenance Program 3 years ago. At first the Maintenance Department had trouble persuading the Operating Department to shut down equipment for inspection and possible repairs when everything was going all right. It looked as though the plant would lose production. But the Plant Manager listened to the Maintenance Supervisor, and decided to give it a try. Now, everyone is convinced. Maintenance costs, they say, have been reduced more than 10 percent and down-time is reduced 50 percent. They say they are "on top of things, now," and are sold on the value of Preventive Maintenance.

Setting Up a System

If you don't already have one, make a physical inventory of all equipment in the plant, and number each piece. Give the job to a trainee, or a new man who you think has potential ability; it is a good way to familiarize him with the equipment and its location. You will find the numbers useful; new help might not know the names of equipment, but they can't mistake the numbers.

When starting a preventive maintenance system, it is necessary, in some cases, to make broad estimate s

on what the inspection cycle should be, because no one can accurately recall what the maintenance history of many pieces of equipment has been. Equipment manufacturers often supply instructions for maintaining the equipment you buy. When you install new pieces of equipment, use these instructions to set your inspection cycles, until you accumulate your own history.

You may, for example, decide at first to inspect an air filter every 2 weeks. After 3 months, you notice that the inspection record card showed that repairs were needed only once during that time. From this you might decide that such frequent inspection was not necessary, and you would increase the cycle to 3, or even 4 weeks. If, on the other hand, you found that the equipment gave you difficulty in spite of the periodic inspection and repair, you would conclude that you were not inspecting frequently enough, and you would reduce your inspection interval.

In order that your preventive maintenance program will operate smoothly and successfully, you will need to establish certain office and maintenance department procedures. These are:

- Keeping a file of Equipment Record Cards
- Using the Call-Up Procedure
- Issuing Inspection Orders, and
- Issuing Maintenance Work orders.

Equipment Record Cards: Cards should be prepared for each piece of equipment and for each building. On them, each operation will be recorded, so that in the final analysis these cards will contain a complete history of all inspection and preventive maintenance work performed in your plant.

Complex items should be divided into parts, depending upon the amount of maintenance required. Typical examples would be pump, lathe, printing press.

Each card should contain information sufficient to identify the item, such as the kind of machine, the manufacturer's name, the size, the equipment number, its location, the date of purchase or installation, together with the inspection cycle selected and the date of each scheduled inspection. Be sure to describe exactly what requires inspection in sufficient detail so that anyone reasonably qualified can make the inspection; remember that the same man will not, and should not, make the inspection each time. Inspectors should be trained to **listen** for the normal rhythms of operating equipment, and **feel** for expected temperatures; this should be almost automatic with them. Frequently abnormal sound or temperature is the first indication of something wrong.

Entries should be made on the card each time an inspection is made or maintenance is done on the equipment. These entries should include the date, a description of the nature of the repair, the cost, how long the job took and material used.

If the particular piece of equipment is large or complex or if certain parts of it require different inspection cycles, such as an offset printing press, a paper pulp grinder, or an air conditioning unit, this should be noted on the card. If this becomes too complex, separate cards may be made up for the different parts.

The repair entries should be made on the Equipment Record Card from the Maintenance Work Orders, together with date of the next inspection.

Call-Up Procedures: Call-Up Procedure refers to withdrawing the Equipment Record Cards each day from the Inspection Schedule file. For instance, on May 15, a clerk withdraws all cards marked for that date from the Inspection Schedule file, and gives them to the person responsible for the inspections.

Some machines or parts may come up for inspection every 2 weeks, while other equipment may be marked for inspection at longer intervals. From time to time, the schedules will need changing or adjusting, some equipment needing inspection more often, some not so frequently.

After each inspection the Equipment Record Card is brought up to date by recording on it the date of the inspection, who made it, and what repairs, if any, were made. The card is then returned to the office to be replaced in the file, according to the date on which the next inspection will be made.

Inspection Orders: The exact form the Inspection Order will take, depends on the size of the plant. It may be as simple as handing the Equipment Record Card to the maintenance man in a small installation, or it may mean that the clerk makes up a Work Order for each card in a larger installation. In any case, the inspector performs the required inspection and reports this and any repair work required on the Equipment Record Card or the Inspection Order.

In smaller plants, where the inspector may be one of the maintenance men, the inspector may do some of the simple repairs, such as tightening a fan belt during the inspection. In larger plants, the inspector would not make any repairs at all.

Maintenance Work Orders: The maintenance supervisor checks the completed Inspection Orders each day, and issues Maintenance Work Orders for the performance of any work required as noted by the inspector. The Supervisor must decide on what work is required, and when, how, and by whom it should be done. The details of the repair operations are noted on the Equipment Record Cards.

Analysis of Equipment Record Cards

Once the system has been established, the Equipment Record Cards provide a very valuable source of information, since they quickly point out where you are spending money for repetitive repairs. You will want to review these cards periodically—once every 6 months is suggested for the average small plant. Careful consideration should be given to determine:

1. Whether the inspection cycle should be—

(a) lengthened, so as to decrease inspection costs, or

(b) shortened, to anticipate downtime to a greater degree, or to compensate for increased repairs needed by older equipment.

2. If the inspection method should be changed. Such questions will arise as:

Are usually concealed or hard-

to-reach parts of the mechanism checked for wear?

To what extent should equipment be dismantled when making an inspection?

3. If equipment should be redesigned.

The Equipment Record Cards may show that frequent repair of a particular part has been necessary. This would indicate that, if possible, the part should be redesigned or constructed of a more serviceable material.

Quite frequently machine shop maintenance men, while figuring out short cuts on future maintenance work, redesign parts which are much more efficient than the original or than parts which could be purchased. The result is equipment designed specifically for the company's needs.

4. Whether the equipment should be replaced.

Your record cards will help you to answer such questions as—

How much have I spent on upkeep of these two different makes of lathe?

Is the greater amount spent on one sufficient to justify its replacement with a newer one or one of a different make?

5. What specific kind, design and make of equipment, and accessories, are best for your particular operation.

You will find yourself asking—

Did the "A" belt wear as long as the "B" belt?

Were the "C" gears as satisfactory as the "D" ones?

Has the "X" coolant been as efficient as the "Y"?

These cards provide a complete maintenance history of each unit of equipment, so that you know what the performance record is, as completely as you know that of your automobile.

Down-Time Reduced

Many plants report that one of the great benefits of the Equipment Record Cards is the fact that poor design of equipment is pointed out so sharply. When the need for design changes and improvement is evident, suggestions are usually forthcoming. Improved design contributes to reduced inspection and reduced down-time.

You will find that you refer to the Equipment Record Cards in preparing your budget, too. The best indication of what you will spend next year on a piece of equipment, is what you have spent on it in the past—and these cards will tell you.

Lubrication

Lubrication is a phase of preventive maintenance which, no doubt, you are already performing in your plant. Lubrication can be broken down into two types—routine and periodic. Usually routine lubrication is a daily operation and is recorded on the lubrication card which should be attached to each piece of equipment. This work can usually best be handled by assigning a group of machines to an individual designated as an oiler, and **should not be a part** of the Preventive Maintenance Inspection and Call-Up Procedure.

The **periodic** lubrication is usually in the nature of an annual or periodical oil change and **should be part** of the Call-Up system.

Follow Through!

As part of management, be sure that you give the preventive maintenance program your full support. Explain the system to your Maintenance Department; explain what you want it to accomplish. If conflicts occur with production personnel because the Maintenance Department wants to shut down equipment **before** breakdowns, give reasonable support to your maintenance personnel.

On Spot Check Basis

To stimulate interest and to prevent inspection from becoming too routine in character, it is frequently a good device to have the inspection occasionally done on a spot check basis by various supervisory and management personnel. Pick up a day's Equipment Record Cards from the Call-Up file some day, and go out yourself, either with or without the regular inspector. You may be surprised at what you find!

By courtesy of Small Business Administration.

Safety Courses

The fall term of courses in industrial accident prevention will open on September 24th at the New York University's Center for Safety Education. Courses will be given in the following subjects: Accident Prevention—Its Background Objectives & Relationships; Philosophy & Basic Principles of Accident Prevention; Industrial Hazards—Mechanical & Personal: Control Methods; Fire Prevention & Protection Inspection; Accident Prevention for Motor Vehicle Fleets; Principles of Safety Inspection; Marine Accident Prevention; Industrial Safety Technology & Instrumentation.

Registration for the courses may be made from September 17 to 28th. For further information about the courses, fees and registration, write to Dr. Walter A. Cutter, Assistant Director, Center for Safety Education, New York University, Washington Square, New York 3, N. Y.

Atomic Trade Fair

The 1956 Trade Fair of the Atomic Industry, sponsored by the Atomic Industrial Forum, Inc., will be held at Navy Pier, Chicago, Illinois, September 24-28 in conjunction with the Forum's annual conference on "Management and Technology for the Atomic Industry." The conference is set for the Morrison Hotel, Chicago, September 25, 26 and 27.

The exhibits will cover a complete range of essential products and services related to the industrial applications of atomic energy, plus materials on medical, agricultural, and research uses. More than 100 exhibiting organizations are expected to take part in the week-long show. Requests for complimentary tickets on business letterhead may be addressed to the Forum at 260 Madison Avenue, New York 16, New York.

Designing the Safer Factory

by **R. T. VAN NESS**, Asst. Mgr.
Design Div., Engineering Dept.
E. I. duPont de Nemours & Co., Inc.

Incorporating safety in design, like safety in any other part of our industrial operations, depends on certain prerequisites:

1. The safety objectives must be specific and must have the full and whole-hearted backing of top management and all supervision. Unless all levels of management and supervision have received safety training over a long period of time and are "sold" on the value of the effort, it would be impossible to have any kind of effective safety integration in the completed work. Safety is not a matter of rules or exhortations, but a philosophy and insight which must pervade the entire organization.

2. Safety training must be intelligently conceived and presented, keeping in mind the type of work, education and responsibilities of the group to be influenced. The program must relate to the employee's own work and experience. It should be developed in such a way that it shows him how he can protect himself and how his efforts can protect others from accidents.

3. Safety is a continuing program. Constant alertness and analysis are required and, therefore, the program should be varied in order to stimulate and hold the interest of all echelons of employees.

4. Safety accomplishments must be measured on both a humanitarian and an economic basis. The elimination of personal injuries alone warrants our best efforts but, quite apart from the obvious humanitarian side, the industrial safety program is also spurred by the realization that safety is a sound business investment. In our industrial life humanitarian and economic interests are inseparable.

FOUR-STEP APPROACH

1. Hazard Recognition
2. Fact Finding
3. Design Development
4. Consultation

5. Promotion of safety cannot be left to people who are misfits in other jobs. To obtain good results requires capable, imaginative and enthusiastic people to be the motivating force in the program.

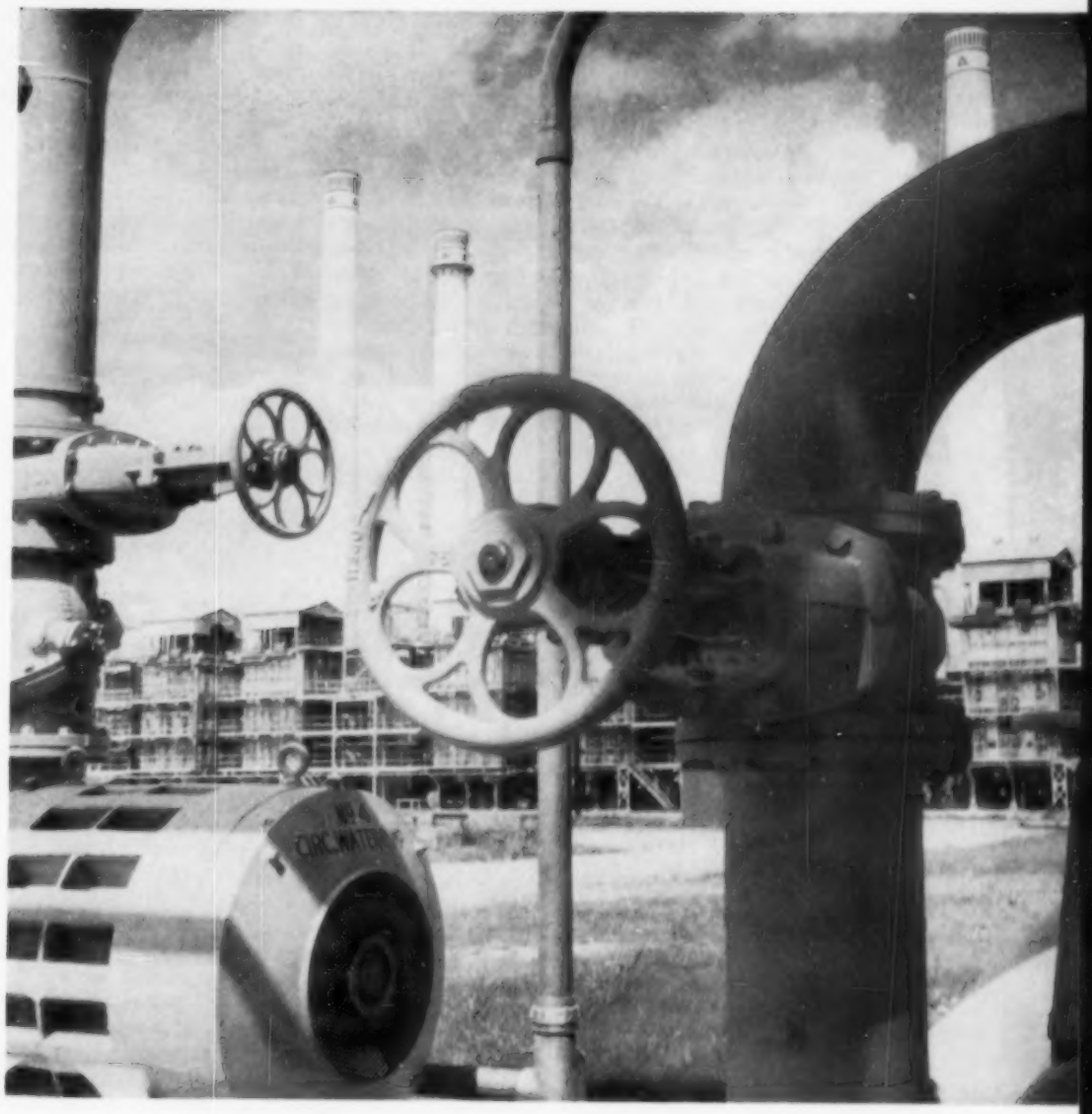
6. Safety programs should aim at the elimination of **all** injuries, not simply at reducing accidents.

Safety considerations and safety training in the author's company started soon after it was formed in 1802. Safety was of the most importance because of the product being made, namely, black powder, and any carelessness, either in the construction or operation of the plant, could result in complete destruction of the property and death of the operators. Safety training and implementation have continued to grow even though the manufacture of explosives is a relatively small percentage of the company's business today.

The keen interest of the top executives of the company in our safety performance is evidenced by General Managers', President's and Board of Director's Awards for outstanding safety records compiled by plants, laboratories, construction sites, etc. These are supplemented by departmental contests and awards for individual safety performance. Accident prevention is so much a part of every company employee's life that he is many times more likely to be injured off the job than on—in a ratio of about 10 to 1. Records show that even when handling high explosives or dangerous chemicals, he is safer at work than at home.

Our organization differs from many companies in that the Engineering Department designs and contructs most of our larger projects. One measure of our success in designing the safe factory is the fact that we have now reached the point where one out of ten accidents is caused by failure of equipment or process. The other nine can be traced to human errors. The equipment in every company plant is designed and built with the safety objectives firmly in mind.

(Continued on the next page)



Of course, no one can design equipment that will render its user wholly immune to hazard. Under improper handling the most harmless appearing paring knife can be a dangerous weapon, or a kitchen range a death trap. The complex tools and equipment in our industrial plants have similar human limitations.

Designers Trained in Safety

The designer plays the leading role in our effort to eliminate, as far as practical, all hazards from the facilities which we design. Therefore, it is of great importance that he be properly trained and constantly alerted to the subject of safety. This is no easy task for he must be taught to balance the factor of safety with those of economy and quality. His interest and concern must be constantly stimulated by training and instruction. The primary objective of such training is to create and maintain the proper attitude towards safety.

Our safety consideration and analysis must go beyond the design and specification of the actual facility. In designing facilities which are safe for operation we must also consider the hazards involved in the construction and maintenance of the facility. For example, a high-speed cutter could be fully enclosed and guarded so that it could be operated with complete safety, but if no provision is made for the safe installation and removal of the cutters for sharpening, it could still present a very serious safety hazard. Designers also have the responsibility to the users to see that the operating complexities of the equipment are understood.

In order to initiate and perpetuate an effective safety program, it is necessary to have an adequate formal safety organization. It need not be large or complicated, in fact

it should be the reverse—simple. The important point to remember is that it be composed of individuals who have the experience to make good decisions and the authority to act upon them—either collectively or individually. Your specific needs will determine the size and type of such an organization for your own company unit.

Our entire Engineering Department program is co-ordinated by a central committee composed of all the assistant managers of our five divisions. It determines safety policies, promotes safety activities, and provides safety material to each of the divisions of the department. Each of the divisions has its own safety organization, the structure of which varies with the requirements of the individual division. In the Design Division the organization consists of a committee composed of the assistant manager as chairman, and members selected from the various groups or areas. These committeemen act in a consulting and promotional capacity only. We place the responsibility for safety squarely upon supervision and each supervisor is held responsible for the safety of his group, and for the safety training of each individual employee.

Each group holds a safety meeting for one-half hour at the beginning of the day on the first Monday of each month. One of the functions of the safety committeeman is to evaluate these meetings and report to the divisional safety committee on the quality of the material and presentation. At these meetings we attempt to develop the analytical approach to safety as applied to our designs. The diversity of our products and the breadth and magnitude of our design work precludes any one man or single authority examining all of our designs to recognize all of the hazards. Therefore, we stress the need for a proprietary interest and for every man being his own inspector and considering the safety features of all phases of his work and working conditions on a day to day basis.

In order to implement these ideas, we embarked upon a four point approach to the problem. Since all of us as engineers tend to solve problems in the same general way, it was natural for us to come to the conclusion that problems of safety should receive the same kind of engineering approach. In fact, I think most people will agree that if they make a safety problem look like an engineering problem, it stands a good chance among engineers of being solved thoroughly and promptly.

The four-step approach, which served as the introduction to our campaign for design of safe facilities, is as follows:

1. Hazard Recognition or **Where** and **What** is it?
2. Fact Finding or **What** is to be done?
3. Design Development or **How** do we do it?
4. Consultation or **Who else** can help?

Hazard Recognition

To get the program under way, we first held orientation meetings with supervision so as to ensure understanding of the objectives and uniformity in the use of the technique.

We then had each supervisor devote one or more safety meetings to a thorough discussion of each of the four points. Thus in a relatively few training sessions, we obtained among all employees assigned to project work a comprehension of the manner in which engineering skill and reasoning could be employed to ensure a safe design.

The incorporation of the necessary safety features in a design is dependent upon recognition of the possible hazards involved. Once a hazard or danger and its cause are recognized, its elimination by competent engineers and designers is practically assured. It is imperative that this ability to recognize a potential hazard be fully developed in every member of the design team. Furthermore, we assume that every facility we design involves safety hazards and, therefore, must be investigated carefully to uncover such hazards. In our safety training meetings we have found it best to separate our personnel into small groups of five to twenty people and to have each of the meetings conducted by the group supervisor. In the meetings devoted to hazard recognition, each group devotes several sessions to developing a list of categories of hazards which they might encounter in their particular design activity. We define a hazard as the peril or danger which can result in injury. Separation of source and hazard is essential to proper analysis. Source is the condition or situation which can cause a hazard. For example, the exposure of high-temperature surfaces is the condition or situation which forms the source of a hazard. Contact with these surfaces is the hazard resulting in burns. Sharp edges on machinery and equipment is the source but contact with sharp edges constitutes the hazard.

In subsequent meetings, the group leader selects typical drawings from the work of the group and has them analyzed step-by-step indicating all areas wherein the existence of material, equipment, operation, or conditions might create a potential hazard, and then lists the factors which might contribute to the hazard. In this part of our training program on hazard recognition, we have found it beneficial to limit the discussion to the recognition of hazards only. This part of the safety training of engineers and designers can not be overemphasized.

Fact Finding

The purpose of this part of our training is to emphasize the various types of information required to develop an intelligent analysis. The first step in this analysis is for each designer or engineer to make the basic decision—should the hazard be overcome by design development or is it more practical to overcome the hazard by other means, such as supervisory control, operating instructions, signs, etc. Some of the factors which must be considered in making this basic decision are:

1. How serious is the hazard?
2. How difficult is its correction?
3. What are the economics involved?
4. Is protection mandatory, that is by law, codes, etc.?
5. How practical and effective is protection by supervisory control, instructions, marking, etc?

Typical drawings can be selected and the group may decide on each

Safety with New Style + Comfort

A COMPLETE LINE OF PLASTIC and METAL FRAME SAFETY SPECTACLES for a COMPLETE EYE PROTECTION PROGRAM

Plastic Frame SAF-I-SPECTACLE

Stronger, More Stable, Durable Butyrate Plastic Frames in choice of colors: Bronze, Slate Blue, Crystal, Burgundy

NEW SIDE SHIELD DESIGN

Folds completely flat — unobstructed side vision — full protection — attractive — comfortable.

Spatula or Riding Bow Cable Temples. Integral Bridge or Adjustable Pad Arms.

Styl-Ize

A NEW LENS SHAPE

Attractive, modern industrial styling.

New Metal Frame SAF-I-SPECTACLE

Modern Bridge Design — Lighter, stronger, more attractive.

SIDE SHIELDS — Wire screen, or clear or green plastic. Comfortable, full protection.

Choice of Temples — Newly styled metal spatula with plastic paddle tip, or cable temples.

Velvet-soft Nose Pads — of Polyethylene, in new shape designed to fit nose contours. Self-conforming. Readily attachable to metal pad arms without tools.

Choice of Lens Material and Lens Shape in Styl-Ize or P-3 in both plastic and metal frames — hardened Safety Glass or shatterproof OPTILITE®. OPTILITE safety lenses are made from an exclusive USSSCO formula of compounded resins which produce a lens with twice the strength and only half the weight of hardened safety glass. Either hardened safety glass or OPTILITE available in Plano or Prescription, Single Vision or Bifocal.

Pioneers in Modern Industrial Eye Wear

Frames and Lenses Meet all Federal Specifications

UNITED STATES SAFETY SERVICE CO.

BRANCHES IN PRINCIPAL INDUSTRIAL CITIES

Div. C-9 – 1215 McGEE ST., KANSAS CITY 6, MISSOURI

IN CANADA: PARMELEE, LTD., TORONTO & MONTREAL

(For details, use Key # V-13 on card on page 37)

THERE'S A LOCAL USSSCO MAN TO SERVE YOU

USSSCO products are developed, manufactured and sold *direct* to the user by the United States Safety Service Co., through a staff of trained safety service engineers. Sales offices are located in principal industrial cities, and a full-time service engineer is only a few minutes, or at the most a few hours, from you. See your phone book yellow pages for nearest sales office, or write us in Kansas City.

of the recognized potential hazards —whether they can best be overcome by design development or by other means. On those items which it is decided that they can best be overcome by design development, the group should further decide on the possible sources of information relating to the particular hazard. These include such things as company standards, codes, laws, regulations, technical publications, etc. On those items which the group decides can best be overcome by other means, it is well to impress on the members that it is up to them to see that the potential hazards are pointed out to those responsible for operation of the facility.

Design Development

In this part of the training program the leader should select several typical problems encountered by the group and have them develop the design approach necessary to overcome each of the hazards. For example, in an area in which flammable and toxic vapors are present, the electrical engineers would analyze the design for types of equipment required, such as explosion-proof motors and starters, special lighting fixtures, etc., and the heating and ventilating engineers would consider such problems as proper location of ventilation hoods and stacks to protect the operators from the toxic effect of the vapors and to reduce the vapor concentration below the explosive range.

Consultation

This part of the program can be a conference-type instructional meeting to inform all employees on the facilities available in his particular company for consultations on safety matters. This part of the program would have to be tailored to fit each particular organization. We have found it desirable to acquaint the design personnel with all the specialists, consultants and laboratory facilities available to them for solving their safety problems.

Let us now take a second look at the four points just discussed. When you come to analyze them, you find that if there is anything novel about them the novelty lies in the first one—hazard recognition. The remaining three are devices we use every day in analyzing data and creating designs. Once the hazard is recognized for what it is, we can be reasonably well assured that it will be circumscribed and eliminated. Of these four steps, therefore, we consider "Hazard Recognition" to be the one toward which most effort should be directed. These four steps and the resulting training sessions have given substance to the approach and have served as an introduction to a more extensive program which we are now carrying on.

Program Expanded

This consists of having each group compile a list of the unusual hazards which they encounter in their design work. Its purpose is two-fold—first, to further train our personnel in the analytical approach to safety in design, and, second, to record in permanent form the experience of our personnel with the unusual hazards involved in our particular plants and products. We limit this analysis to the unusual hazards since our engineers and designers, with their long experience in safety, are capable of recognizing and taking care of the usual routine hazards. The usual guards and protective devices are covered by our standards and the repetitive hazards peculiar to a design group are soon recognized by the personnel performing that function.

Each design group, however, at some time encounters an unusual safety problem. The lack of recognition of this unusual hazard is our chief concern. Close study will often reveal a potential hazard even though it may never yet have caused an injury. Many times the safety considerations are worked out after unfortunate experiences and too often when the job is repeated, the man with this background is busy elsewhere. In this part of our program we are trying to record as much of the know-how as possible for use by all sections. In order to make this information of maximum use, a uniform format has been developed for recording it. The information is recorded on the form under three headings—source —hazard—remarks or reference. As mentioned before, we define a hazard as the peril or danger which can result in injury. The source is the condition or situation which can cause a hazard. The remarks or reference column indicates where information may be found to assist the designer in overcoming the hazards.

The information thus developed is accumulated for reference in a binder, either under the heading of the product being manufactured or the functional grouping. In these training meetings, the current design problems are used as the subjects, the development and presentation of the material is usually assigned to one of the more experienced engineers in the group. The information is developed by the conference method and is recorded by the leaders. The information thus developed is later edited and printed for reference. This part of our program is a continuing one.

Frankly, we were pleased by the interest and participation by every member of the design force in these meetings. I am convinced that there is a very definite collateral value in these meetings; that is, in the transfer of the "know-how" of the more experienced design personnel to our younger employees. The younger employees receive considerable training in general engineering practices as well as in safety.

The objective of designing a safe factory can only be accomplished by the training of every member of a design team to tackle each safety problem with the same analytical approach that he would use in any other engineering problem. In undertaking such a program, however, it must be borne in mind that it is not a "one-shot" proposition. Design know-how is dynamic. It is affected by technological advancement and is augmented by new products and new processes. New technological advancements, new products and new processes increase its complexity. The safety know-how also must be dynamic. The increasing complexity of the facilities complicates the recognition of the hazards and their causes, hence, the need for training is unrelenting.

From an address presented the 1955 Semi-Annual Meeting of the American Society of Mechanical Engineers.

Demonstrator dons suit made of insulated and aluminized fibre glass for great heat.

On the hot seat! Intense heat sets wicker chair afire, while the sitter remains cool.

Here the heat is so extreme an armload of wood held by demonstrator roars into flame.

cool suit for hot spots

A suit that enables a man to work in temperatures one-eighth as hot as the sun's surface was demonstrated in New York recently. The demonstrator six times entered an industrial furnace heated to 1,200 degrees Fahrenheit. He stayed two or three minutes each time as if on a repair or rescue mission.

The demonstration was held to show the heat-protective qualities of fabrics coated with a thin layer of aluminum. The aluminum-coated fabric reflects radiant heat instead of insulating against it.

This permits less bulky insulation, it was explained, so that a man can move and work at temperatures higher than ever before to repair, investigate, inspect, rescue or extinguish.

To demonstrate the intense heat from which he was protected, an engineer wearing the aluminum-coated suit walked into the 1,200-degree oven carrying an armload of wood which burst into flames while he held them.

He returned with a sheet of steel wool which flared almost immediately, and then a manikin wearing a fireman's rubber fire-fighting coat and another wearing ordinary street clothes, both of which burned while he was unaffected.

He took in a wicker armchair and sat in it while it burned, and he topped off the demonstration by carrying in a half-inch-thick steak that cooked to medium-rare in about 1½ minutes—while he didn't.

Ordinary street clothes worn by dummy burst into flames. "Cool suit" protects tester.

The demonstrator was D. J. Bennett, an engineer from Zanesville, Ohio, who reported he had tested the suit previously "about 200 times" in industrial repair work in ceramic kilns at temperatures in the 1,200-degree range.

It was the first public showing of the aluminized fabric used in the suit. The fabric has been undergoing on-the-job evaluation in hundreds of such suits in industrial plants during the past four years.

The furnace selected for the demonstration was a ceramic box furnace at Seaporcel Metals, Inc., Long Island City, where temperatures could be maintained at an even 1,200 degrees Fahrenheit.

Bennett said he had worn the suit into higher temperatures, up to 1,400 degrees, and "never felt the heat."

"Nine-tenths of the heat is reflected away by the aluminum coating," Bennett said, "and the little heat that gets through is dissipated by the layer of glass fibre quilting beneath the aluminum coating.

(Continued on page 34)

KEEPING UP WITH

IMPROVED LADDER SHOES

Safe-Hi ladder shoes, manufactured by the Rose Manufacturing Company, now feature a slanted screw slot which is said to speed installation. The new shoes eliminate the need to round the base of each of the ladder rails before installation. Instead, the shoes can be installed by simply sawing off the corners of the ladder rail to form a flat-bottomed "V."

Safe-Hi steel ladder shoes feature neoprene treads for positive gripping action, and are painted a high visibility yellow to avoid tripping hazards. The shoes are UL approved for use on any type of surface.

For details, use **Key # LS-1** on Inquiry Card on page 37.

ALUMINUM STEPLADDER

Immunity to rust, rot or mildew and resistance to corrosion make this lightweight, heavy-duty aluminum stepladder ideal for all kinds of construction, maintenance or repair work. The ladder is available in sizes from 4′ to 14′, with heavy-duty rubber pads on feet to prevent slipping, and marring of floors. Front rails are made of 1″ x 3⅞″ channel 6063 T-6 alloy. Rear rungs are double-braced ¾″ by 1⅝″ by 3/32″ channel 6062 T-6 alloy. Easy to handle, the durable ladders are available from the Patent Scaffolding Co., Inc.

For details, use **Key # LS-2** on Inquiry Card on page 37.

STAIR STAND

Two models of a stair stand have been made available by I. D. Cotterman, intended for working heights of 13 feet and over. Specifications are similar for the two models, available in platform heights of from 81″ to 117″. Major difference is the "Depth at Floor" dimension, which for the Challenger Model is approximately 6″ less than for the Standard Model.

Both models feature rubber tread, non-swivel casters on the back legs for stability, as well as swivel casters for moving the ladder. Release of a foot-operated locking device forces the swivel

LADDER & SCAFFOLD DEVELOPMENTS

casters down and raises the ladder legs so the ladder can be moved about. Pressure on the release pedal lowers the rubber-tipped legs, immobilizing the ladder. Guard rails are provided on both the steps and platform.

For details, use **Key # LS-3** on Inquiry Card on page 37.

PLATFORM LADDER

Featuring floor-like footing for overhead maintenance workers, a ladder known as the Platform has been introduced by the Goshen Manufacturing Company. Available in heights from 5′ 7″ to 14′ 6½″, the ladder features a large, sturdy work platform with an automatic locking device.

Other features of the wood ladder include non-skid, elliptical-contoured rubber treads on all contact points; a top step containing a rack-type tool holder; steel guard rails between the top step and work platform; steep spreader-locks with finger-protecting sleeves.

For details, use **Key # LS-4** on Inquiry Card on page 37.

STOCK ROOM SERVICER

The introduction of a new "Stock Room Servicer" has been announced by Atlas Industrial Corp.

This new unit makes everything in the stock room accessible. It is easy to make use of the high, hard-to-get-at spaces in stock rooms, warehouses, etc. The Stock Room Servicer is easily rolled and maneuvered in aisles, hallways, doorways and other tight spaces. The unit can reach any desired height and collapses to 42″. It can raise or lower heavy materials. Electrically operated on house current or battery. Ladders are furnished on either side or both sides to specifications.

For details, use **Key # LS-5** on Inquiry Card on page 37.

LADDER GUARD RAIL

A new safety-bar now makes the Safe-Lad mobile ladder-truck safer than ever according to the manufacturer. Use of the accessory provides guard rail protection on all

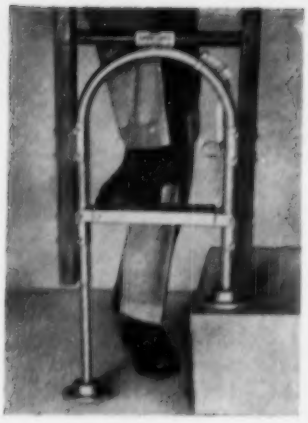
four sides for work in the 9 to 14 foot maintenance zone. Attached to the original 3-side guard rail, the safety bar remains at waist level, adjustable for snugness as operator ascends. The bar swings to the rear and locks when not needed.

The Safe-Lad Mfg. Co. reports operators are more secure, particularly when standing on the highest Safe-Lad step (6′) or on the auxiliary platform (7′), and feel free to use both hands for work.

For details, use **Key # LS-6** on Inquiry Card on page 37.

LADDER LEVELER

A safety device that is said to eliminate most ladder accidents has been put on the market by H-B Industries, Inc. Called "Ladr-Levl," it is easily attached to any ladder, wooden or metal. Its self-adjusting legs adapt themselves to any terrain, no matter how uneven, and permit the ladder to stand up-



right securely. Slipping is prevented by non-skid, swiveling feet. For use on stairways or steps, its legs take a full 9½" riser.

When the user puts his weight on the first rung, the mechanism locks automatically in place, and can be unlocked only by hand. The Ladr-Levl has been use-tested for a number of years by painters, glaziers, contractors, electricians, public utilities, maintenance men, outdoor advertising firms, and construction companies. It has been in rigorous daily use under the supervision of university research workers to test its safety and dependability.

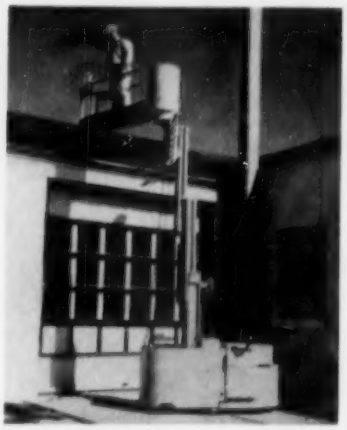
Other important advantages are: the weight of the ladder is always directed downward along the side rails, eliminating lateral stresses; it can be easily installed by the purchaser, and can be transferred from ladder to ladder. It eliminates makeshift, unsafe leveling devices, such as wood blocks or bricks. It is manufactured to a minimum 1,000 lb. ladder load test, is fabricated of a special aluminum alloy, and weighs only 5 pounds.

For details, use **Key # LS-7** on Inquiry Card on page 37.

MAINTENANCE LIFT

A new, more compact unit for overhead maintenance, and designed for narrow aisle spaces and working heights of 20′, has been developed by the Lift-A-Loft Co. The Swivel Lift-A-Loft is 28″ wide and has a turning radius of 3′–6″. Its narrow width and short turning radius make it extremely maneuverable. The unit will turn from a 4′ aisle into a 3′ aisle. The powered platform reaches a height of 15′ allowing a working height of approximately 20′. From all heights, after rising above the mast, the platform swivels a full 360° continuously providing a 5′ reach over obstructions. The reach is increased by the distance a man reaches over the side.

Completely self sufficient and self-propelled, the machine con-



tains its own 24 volt power supply, a 32 gallon water system for cleaning, lighting, etc., an electrical outlet for operating D.C. power tools or a vacuum cleaner, and special racks for carrying fluorescent tubes. The unit operates a full 8–12 hours on its own power before needing recharging. Designed for a one man operation, all controls are located conveniently on the platform.

For details, use **Key # LS-8** on Inquiry Card on page 37.

FALL SAFETY HARNESS

The Wind-Kor Automatic Safety Device permits free movement yet provides absolute safety for workers on jobs where falls are hazards. The device consists of a sturdy

metal box containing an aluminum drum with an automatic safety brake and reel of 50 feet of 5/16″ nylon or 100 feet of 5/16″ stainless steel wire rope. An all-nylon (with Government approved hardware) suspender type harness worn by the user and a metal carrying case are also included. In operation, rope can be withdrawn freely from the box up to a certain speed allowing freedom of movement, but at a higher speed the brake stops rope withdrawal to prevent worker from falling more than 2 of 3 feet. After such a fall the worker is suspended in a comfortable, upright position where his rescue can be quickly and easily effected. An automatic spring rewind, with adjustable tension, keeps the rope or cable taut at all times eliminating the hazards of trailing lines.

For details, use **Key # LS-9** on Inquiry Card on page 37.

MAINTENANCE PLATFORM LADDER

The Michigan Ladder Co. has introduced an improved model of their maintenance platform ladder. Known as the Utility Safety Platform Ladder, it is said to safely support two men working simultaneously on both sides of the ladder.

Features include a large work shelf at the top of the ladder and a broad, sturdy platform for firm footing, on the step below the work shelf. The ladder is of wood construction and folds for convenient handling and storage. Recommended for painters, maintenance workers, etc.

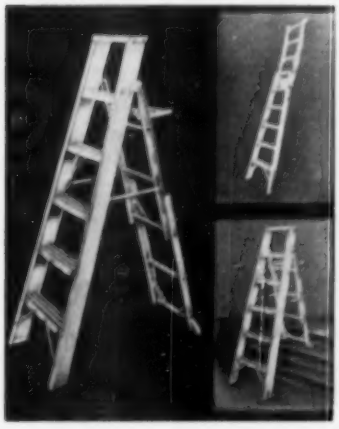
For details, use **Key # LS-10** on Inquiry Card on page 37.

RESTYLED ALUMINUM STAGES

A newly restyled line of aluminum stages and scaffolds has been introduced by the R. D. Werner Co. The stages are designed and engineered for maximum safety at any height. Light in weight, they can be raised or lowered with ease.

Cross rungs are locked into the side rails by the "Alflo" process, an exclusive technique developed and perfected by the company. Elongated dimpled decking provides a comfortable and slip-resistant flooring. Red vinyl end caps serve as convenient carrying handles and end markers. The stages are made in two load capacities, 1200 lbs. or 1600 lbs. Actual test ratings indicate they exceed the maximum requirements.

For details, use **Key # LS-11** on Inquiry Card on page 37.



TRIPLE-DUTY STEPLADDER

Called "Superlight Magnesium All-way Stepladder," a new, versatile stepladder has been announced by Moss Products. The unit not only serves the purpose of three different ladders, but also provides safety and convenience.

Constructed entirely of magnesium, it is primarily a 6-foot stepladder with: side rails of 3" x 1" channel; reeded non-skid steps, reinforced by strong under-ribs substantially riveted to side rails; bucket rack; adjustable back rails hinged near to top rear of side rails; heavy front and back bracing; hard rubber feet which prevent slipping and eliminate floor marking. The flare is 1¼" per foot and the spread 39".

It is a triple duty ladder and can be used as a stepladder, as a "stairs" ladder, or for use on uneven surfaces (the adjustable back rail unit may be shortened and securely locked) and as a 9-foot extension ladder, by swinging the back rail unit completely up and over to form an extension of the front rails. In doing this, the spread supports are unlocked and the bucket rack folded.

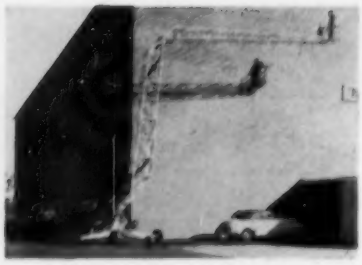
For details, use **Key # LS-12** on Inquiry Card on page 37.

(Continued on the next page)

WISE TO CHOOSE
SAFE TO USE
THOSE IN THE KNOW
. . . PREFER
Install K-LENS-M Lens Cleaning and Anti-Fogging Stations for clean, clear vision . . . for all types of safety eyewear, glass or plastic.
More Efficient—Lower Cost
Send company letterhead for FREE sample and complete information.
K-LENS-M
The Acknowledged Leader in the Lens Cleaning Field
The WILKINS Co., Inc.

©1955 Cortland 2, N. Y.

(For details, use Key # V-14 on card on page 37)



TRUCK MAINTENANCE-TOWERS

A new line of all-hydraulic, operator-controlled aerial towers, designed for mounting on conventional motor trucks, industrial trucks or flat cars, has been introduced by Strato-Tower Division of Elkhart Welding & Boiler Works, Inc. Strato-Tower units are offered in three standard sizes, with maximum platform heights of 30, 45 and 60 feet, and each is available with wheeled outriggers, or with spring lock-out table. Turntable is easily levelled, front to back or side to side on any terrain. Platform at end of double-jointed boom is self-levelling and gives 24" x 48" working area. All models feature: one-hand control from platform; independent power source; welded steel booms (solid plate on 30 and 45 ft. models, open fabricated on 60 ft. models).

For details, use **Key # LS-13** on Inquiry Card on page 37.

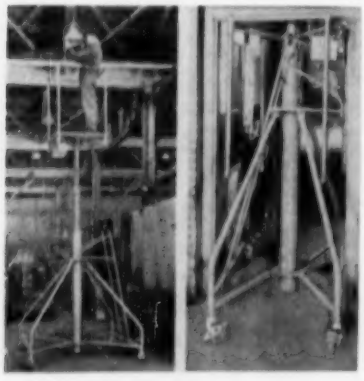
HYDRO-ELECTRIC WORK TOWER

A new hydro-electric elevating work tower for one-man use has been introduced by Safway Steel Products, Inc. Powered by a ¾ hp. single-phase electric motor, the "Moto-Lift" can be plugged into any 110 volt a-c outlet. The motor operates an efficient hydraulic pump to raise the work platform from 7 ft. to 17 ft. above the floor in 25 seconds. The working capacity is 400 lbs.

The new plug-in tower is provided with 50 ft. of heavy duty extension cable, permitting work along a 100 ft. strip before moving to another outlet. Battery and hand operated models are self contained and can be used anywhere.

Towers are equipped with swiveling casters to follow progressive work. Positive safety brakes act on both the wheel and the swivel to lock the tower in each working position. The 4-legged 61 by 61 in. base provides stable support. However, towers can be telescoped to pass through low, narrow doors as small as 7 ft. high by 30 in. wide. Platform guard rail posts slide down in their sockets.

For details, use **Key # LS-14** on Inquiry Card on page 37.



PLATFORM FOR STEPLADDER

An auxiliary step, which when attached behind a normal ladder step forms a safe, wide, work platform, has been developed by Comfort Step Ladder Brackets. The step platform, with sides channeled to clamp to the ladder rails, is approximately ¾" thick, 3½" wide, and available in several lengths. When positioned, it rests level with and firmly against any step on the ladder. The Comfort Step Ladder Bracket is easy to attach or remove, but may also be permanently positioned at a particular step.

For details, use **Key # LS-15** on Inquiry Card on page 37.

HEAVY-DUTY STEPLADDER

An extra-heavy-duty stepladder, the Super Craft, has recently been added to the line of "Gold Medal" ladders, products of the Patent Scaffolding Co., Inc. Designed for use by plasterers, plumbers, and maintenance crews in industrial plants, the ladder is said to equal or exceed specifications of the safety code of the American Standards Association. Because of its oversize front rails and rear legs, it will withstand considerable abuse.

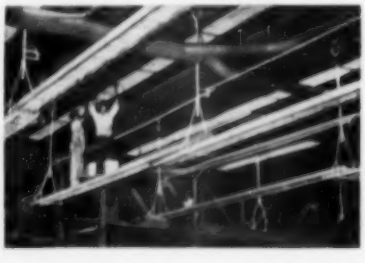
All steps are supported by truss rods and knee braces; top and bottom rungs are supported by pressed braces, with an intermediate set on 10-ft. and 12-ft. sizes. The ladders are available in sizes 4 feet to 12 feet.

For details, use **Key # LS-16** on Inquiry Card on page 37.

BEAM SCAFFOLD

An all-metal beam scaffold, or hanger, for suspending planking or catwalks from I-beams and girder-type structures, has been introduced by Bil-Jax, Inc. Gravity holds the scissors-hook safely in place on the beam.

For details, use **Key # LS-17** on Inquiry Card on page 37.



Boiler Feedwater Conditioning

In the operation of all types of steam generating equipment, the chief causes of depreciation, repairs and inefficient operation are corrosion and scale. To control these conditions, modern science of boiler operation calls for conditioning of the feedwater.

The ideal treatment would produce water of slight alkalinity, zero dissolved solids and complete absence of free oxygen. In customary practice, chemicals control acidity; evaporation or ion exchange resins remove dissolved solids; and preheating the feedwater and adding sodium sulphite reduce oxygen content. These methods have greatly lessened corrosion and scale.

In the area of oxygen removal, however, there is much room for improvement. It requires a considerable excess of sodium sulphite to eliminate oxygen and its use adds dissolved solids either as the original sodium sulphite or as sodium sulphate after reaction with oxygen. These dissolved solids are a serious disadvantage, particularly in the new higher-pressure boilers. In all installations, the rising costs of equipment and repairs have made complete removal of free oxygen from feedwater an urgent necessity. A better answer to oxygen elimination is offered by hydrazine, which is now commercially available.

Hydrazine (N_2H_4) is a clear, water-white, alkaline liquid with an ammonia-like odor. Hydrazine reacts with oxygen (O_2) to form nitrogen (N_2) and water (H_2O). Theoretically one pound of hydrazine reacts with one pound of oxygen. Boiler operators have found, however, that less than one pound of hydrazine will eliminate the corrosive effect of one pound of dissolved oxygen. Moreover, hydrazine, neither in its original form nor through its reaction products, adds any dissolved solids. In these two important respects, therefore —in deoxygenating more efficiently and in **not** adding solids—hydrazine is an improvement.

There are also important corollary benefits in using hydrazine. These are:

1. Hydrazine contributes desired alkalinity to the water (1% solution has a pH of 9.9)
2. It improves heat transfer by reducing ferric oxide scale in the boilers to magnetic iron oxide.
3. Being used in low concentrations, it takes little storage space and little handling labor.
4. Hydrazine effects a saving in actual material cost.

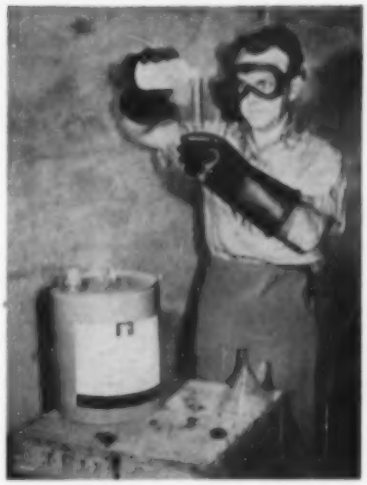
Thorough testing and experience have proved that there are no disadvantages of any consequence in using hydrazine.

The first use of hydrazine in boiler feedwater in this country was in 1951. Although this use of the product was still under development in 1955, known users in that year included 44 utility plants, 10 industrial plants, and 13 buildings and apartments. Large installations, which represent the largest investments and operating responsibilities, make up the largest group of present users. Hydrazine is now protecting utility plant boilers worth an estimated total of $200,000,000.

One Recommendation

The concentration of hydrazine recommended by one producer of the chemical for boiler feedwater treatment is a 35% aqueous solution. In this form hydrazine is stable and non-flammable and is shipped in non-returnable containers.

In this concentration there is no unusual handling hazard; the only precautions necessary are those customary in handling strong alkalies.



Measuring hydrazine solution requires use of rubber gloves and chemical goggles.

The question of how much hydrazine is required in any given boiler can be answered when it is known how much dissolved oxygen is contained in the incoming feedwater.

If the feedwater is not mechanically deaerated it may contain up to 8ppm. of dissolved oxygen. On the other hand, if the feedwater is deaerated and the deaerator is operating efficiently, the feedwater at the effluent of the deaerator may contain dissolved oxygen from a lower limit of 0.005 ppm. up to 0.1 ppm. depending upon the type of deaerator in use.

In any event, the dissolved oxygen content of the feedwater at the discharge of the deaerator or at the discharge of the feedwater pump should be determined by taking water samples at one of these points. If the oxygen content is 0.04 ppm. or more the Winkler Method can be used. For lower values of dissolved oxygen the

ASTM D-888-49-T Method is recommended.

In theory, one pound of hydrazine is required to remove one pound of dissolved oxygen. This fact can be used as a basis for determining how much hydrazine should be added to boiler feedwater for oxygen removal.

After a hydrazine residual has been established, the initial feed rate can sometimes be reduced without losing the protection of the desirable hydrazine residual in the boiler. Cleanliness of the boiler has a direct effect upon the rapidity with which the initial hydrazine residual is produced.

Some Recirculation

In a tight system there is some recirculation of hydrazine, so there may be a slight build-up in the boiler. That is another factor which tends to reduce the required dosage once a residual is present and after the system has been conditioned with hydrazine. Under these circumstances it has been found that the addition of hydrazine in quantities less than the theoretical is sufficient to afford ample protection from internal corrosion.

Application of Hydrazine

For use in industrial plant boilers, hydrazine solution is usually fed continuously into the feedwater line between the outlet of the deaerator and the intake of the boiler feedwater storage tank. With this arrangement a chemical proportioning pump is used to inject the hydrazine solution into the feedwater line against the back pressure of the flowing stream.

Simplest Application

In low pressure heating boilers, hydrazine solution is most simply applied batchwise. A double-valved piping connection can be fitted to the outside of the boiler at a convenient point above the water line. When adding hydrazine solution, the upper valve is opened and the correct amount of hydrazine solution is poured into the pipe. By closing the upper valve and opening the lower one, the hydrazine is then dropped into the boiler. Specific instruction sheets for various types of installations are available to users.

The simplest type of testing equipment for hydrazine are color comparators now available for determining hydrazine content of boiler feedwater in fractional parts per million. These are relatively inexpensive, being in the price range of other color comparators widely used for pH measurements, orthotolidin test sets (for available chlorine), etc.

Precision instruments for determining hydrazine are also available, including a hydrazine recorder. This type of equipment is considerably higher-priced and is applicable generally to larger boiler installations.

Although high concentrations of hydrazine can be ignited, solutions containing 40% N_2H_4 or less have no flash point. Direct contact of hydrazine with the skin, and also inhalation of the vapors, should be avoided. Some individuals who are allergic develop dermatitis upon prolonged contact with small amounts of hydrazine. For this reason, if hydrazine solution is spilled on the skin it should be flushed off at once with plenty of water.

In general, if sufficient ventilation is provided to prevent a noticeable odor of hydrazine, no exposure damage will be suffered.

Picture by courtesy of Olin Mathieson Chemical Corp.

Cool Suit

(from page 27)

The only heat I feel is the accumulation of my own body heat."

The suit used in the demonstration has the aluminum coating on a fibre glass material which is backed up with fibre glass quilting. It is designed for intense heat.

Other existing garments are produced from aluminum-coated light asbestos (1.2-pound herringbone, Underwriter's grade) or aluminum-coated cotton duck. These require no other insulation. Their light weight, flexibility and durability permit them to be worn all day by workers in hot areas, such as near steel furnaces.

Both the cotton duck and light asbestos are equally heat-protective, but the asbestos also protects against molten splash while the cotton duck does not.

One safety garment maker uses aluminum-coated glass fibre material, backed by a layer of rubber, to produce a fireman's fire-fighting coat. The result is a lighter coat, easier to work in, yet with greater heat protection. The layer of rubber makes the coat waterproof.

Variety of Garments

Aluminized garments now being manufactured of aluminized fabrics include fire-fighting coats for firemen; long-coats, aprons, spats and gloves for steel workers; coats, suits, gloves and helmets for stand-by fire-fighting equipment in industrial plants; quilted suits with aluminum-coated fabric exteriors for use in industrial ovens and furnaces; suits for emergency personnel at airports, oil fields and other locations where emergency action can save time, money and lives; and other garments designed for specific "hot jobs" in specific industries. Twelve manufacturers of industrial clothing are now offering aluminized clothing nationally.

During four years of field evaluations, the aluminized fabric has saved lives, prevented property damage and saved hundreds of thousands of dollars in production time by permitting quicker entry into hot areas.

An eastern steel company reported an incident in which molten slag was showered on two workers wearing long coats made of aluminum-coated asbestos—and the slag, which the steel firm said would have killed the men, rolled off the coats and left the men with only minor burns.

Repairs Hastened

In another instance, a midwest firm reported saving 35,000 man-hours in production time because an aluminized suit permitted an engineer to enter a hot zone immediately and make a ten-minute repair. Otherwise the firm would have had to shut down production for a several-days cooling-off period before the repair could be made, then re-heat for several days before resuming production.

Pictures by courtesy of Minnesota Mining & Mfg. Co. and Fyrepel Products, Inc.

SEND THIS PERSONAL SAFETY MESSAGE

TO EVERY ONE OF YOUR EMPLOYEES!

Safety is made attractive...vivid...colorful...

each worker clearly sees how safety benefits him.

You get enthusiastic safety cooperation instead of

tolerance...from every employee...every month.

YOUR
Safety News
THE JOHN DOE COMPANY, INC.
PROTECT YOURSELF
3
WAYS
There are three safe practice ways that do the most good in keeping free of accidents, all based on your personal desire to know safety and keep yourself safety-minded by studying the hazards of your work. They are:
1 Make sure all guards are in place and working, and wear the personal protective equipment your job requires.
2 Learn the safe way to do a job and do it just that way.
3 Report, avoid or eliminate all unsafe conditions.
As we see it: Safety is part of every job and like any craft is requires skill.
John Doe

Size 9½" wide x 8½" deep

...talks the worker's language!

Full of color, pictures, humor and snap, it makes safety interesting and down-to-earth. 12 times a year it covers every accident hazard. Nationwide, leading industrial firms state it's the *only safety paper their employees will read* . . . and take home to their families.

It gives you the advantages of personal contact, saving time and money. When it prevents one Lost Time accident, it has more than paid its cost for the year. Try it . . . it works!

Your Imprint Here!

makes YOUR SAFETY NEWS your own publication . . . a good-will ambassador . . . another force for better industrial relations.

Every employee feels bucked-up by a note from the boss. If you desire, your facsimile signature can be printed here.

Your Signature Here

NOTE:
Your Safety News is designed to promote better employer-employee relations. Every item is carefully weighed from this viewpoint.

INSIDE PAGES
(pages 2 and 3)

Lions & Machinery have Hungry Jaws
NEVER REACH INTO MACHINERY WHILE IT IS RUNNING!
WANTED
Guard Well
from the CARELESS ACTS of others the WISE MAN corrects his own
SAFETY SHOES
WORK OVERTIME
Dress for Safety
SAFETY SHOES
FALLS
FALLS KILL AN EVERY DAY

IN YOUR EMPLOYEE'S INTEREST

Your employee's self interest in his own safety is always emphasized. Even household hazards are covered to keep him safety-conscious every minute, not only in the plant, but at home and on the way to work.

CHOCK-FULL OF ILLUSTRATIONS

Artwork is carefully chosen to lodge home each point. The cartoon style makes YOUR SAFETY NEWS as familiar and as welcome as the Sunday supplement.

THE "FOLKSY" APPROACH

Keeping the contents folksy, adding the grace note of humor, delivers your safety message with a nudge instead of a bludgeon. Your monthly shot gets enthusiasm instead of tolerance.

VIVID COLOR

Generous use of color gives sparkle, adds to the attention-riveting qualities of YOUR SAFETY NEWS. Each issue is as lively as any newsstand favorite.

HOW TO ORDER

YOUR SAFETY NEWS may be ordered with either the Standard Imprint or with your Own Special Imprint. The Standard Imprint reads PLEASE COOPERATE FOR THE SAFETY AND HEALTH OF ALL . . . signed . . . A SAFE WORKER.

You can personalize YOUR SAFETY NEWS with the name of your firm and the name or facsimile signature of a company representative as illustrated. Give full instructions for your Special Imprint on the order blank below.

Item (1) FIRM NAME. Please show the name of your firm exactly as it is to appear.

Item (2) INDIVIDUAL NAME OR SIGNATURE, if desired. On a sheet of white paper, please show, in black ink, the individual name or signature, if desired, which is to appear each month on the first page of YOUR SAFETY NEWS.

NOTE: Although a personal signature is effective, some firms substitute: SAFETY DEPARTMENT, YOUR SAFETY COMMITTEE, A SAFE WORKER, etc.

Clip Out & MAIL TODAY!

ALFRED M. BEST COMPANY, Inc. • 75 Fulton Street, New York 38, N. Y.

Gentlemen:

Until further advised, please publish for us each month_____ copies of YOUR SAFETY NEWS at _____¢ each.

☐ Special Imprint ☐ Standard Imprint

Item (1) — Our Special Imprint should appear as follows:

_____

Item (2) — (If desired) - Please imprint the name or signature shown on the attached sheet of white paper, or the following:

INVOICE TO:

Name_____

Firm Name_____

Address_____

City_____ Zone____ State_____

( ) **PRICES**

Per Month	Your Special Imprint	Standard Imprint	Per Month	Your Special Imprint	Standard Imprint
4,001 copies and over ...	2½¢ each	2¢ each	200 to 500 copies	5½¢ each	4½¢ each
3,001 to 6,000 copies	3¢ each	2½¢ each	100 to 199 copies	6½¢ each	5¢ each
1,001 to 3,000 copies	3½¢ each	3¢ each	25 to 99 copies	*	5½¢ each
501 to 1,000 copies	4½¢ each	4¢ each			

* 5½¢ each plus $3.50 per month. For Special Imprint. F.O.B. New York, N. Y.

FREE BULLETINS & CATALOGS

As a convenience to executives, these new publications of manufacturers are offered by the Reader Service Department of SAFETY MAINTENANCE & PRODUCTION. To obtain copies write in the key numbers on the free-postage card below.

MATERIALS HANDLING

Aluminized Wire 633
American Chain & Cable Co., Inc., Page Steel & Wire Rope Div. Featured in this informative, 6-page brochure are aluminum-coated iron and steel wire products including lashing wire, core wire, chain link fencing, barbed wire, etc. The wire is said to provide the strength of steel with the corrosion-resistance of aluminum.

Underhung Overhead Cranes 634
Chicago Tramrail Corp. A complete line of underhung overhead cranes is illustrated and described in this informative catalog. Track and trolley data is included along with electrical information covering collectors, controls, conductors, motors, etc.

Power Conveyors 635
Harry J. Ferguson Co. Two-color, illustrated catalog of an extensive line of light and heavy duty power conveyors. Included is size and dimension data, plus installation photos of conveyors in operation in various industries.

Barrel & Drum Dumpers 636
Uhrden, Inc. Fully illustrated bulletin describes a line of dumpers designed for handling kegs, barrels and drums, but which can be adapted to handle skids, pallets and box trucks. Manual and electric models are available with a choice of lifting capacities and dumping heights.

BUILDING MAINTENANCE

Protective Sheeting Material 637
Johns-Manville. 6-page folder explains the uses for an asbestos-cement sheet material, and illustrates typical applications. The folder also provides information on physical properties, sizes, dimensional tolerances, and installation.

Bonding Agent 638
Walter Maguire Co., Inc. Two-page bulletin describes an agent for bonding a hard surface flooring to new or old concrete floors. Provides information on its application, as well as recommendations for its use.

Floor & Roof Repair Materials .. 639
Ranco Industrial Products Corp. A 25-page booklet, fully describing a complete line of floor resurfacing, skid-proofing, and roof repair materials. Over fifty different products described. Specifications and recommendation plus a complete price list included.

SIGNS & SIGNALS

Flashing Signal Light 640
The Pyle-National Co. Information on a flashing visual warning signal, suitable for many applications, is available in this illustrated bulletin. Mounting methods and accessories for the signal are also furnished.

Animated Moving Message Signs 641
Flash-O-Graph Corp. 4-page brochure explains a line of signs that provide moving messages as well as animated displays. Highly informative, it includes specifications, and applications for the various models available, and a price list.

Luminous Markers 642
American Advertising Co. Illustrated bulletin explains the uses for pressure sensitive luminous markers that are automatically recharged by exposure to light. The markers may be used as directional guides, boundary markers, etc.

PERSONAL PROTECTION

Safety Clothing 643
Plasco Safety Products Co. Illustrated, and in color, this brochure details a line of safety clothing and equipment. Specifications, sizes, and prices are given for the various items which include aprons, jackets, overalls, goggles, etc.

Welding Helmets 644
Mine Safety Appliances Co. Glass fiber welding helmets are featured in this colored, 4-page brochure. Several types are available, including a combination welding helmet and hard hat. Also shown is a nitrometer mask for facial protection from splashing chemicals.

Head & Eye Protection Equipment 645
Dockson Corp. Illustrated folder describes nearly thirty products for head and eye protection. The folder includes several types of goggles, eye shields, welder's helmets, masks, hats and lenses.

Work Gloves 646
Hood Rubber Co. A line of neoprene-, rubber-, and plastic-coated work gloves for a wide variety of industries and applications are featured in this illustrated booklet. Included is information regarding the manufacture of the gloves, and a performance chart to aid in the selection of gloves for specific work conditions.

FOOT PROTECTION

Safety Shoes 647
Hy-Test Safety Shoe Div., International Shoe Co. Attention, shop inspectors. For your use, a line of safety shoes are illustrated and detailed in this informative brochure. The shoes, which include both high-top

(Continued on the next page)

SPECIAL OFFER BELOW VALID ONLY FOR THREE MONTHS AFTER PUBLICATION DATE

READER'S INQUIRY CARD

HOW TO GET FREE DATA! **(No Postage Required)**

ADVERTISED PRODUCTS: Just insert the key number shown under each advertisement in the boxes below.

NEW PRODUCTS ("WHAT'S NEW" PAGES): Insert the key numbers shown on each item.

FREE BULLETINS & CATALOGS: Insert the key numbers shown on this page.

KEEPING UP WITH RECENT DEVELOPMENTS: Insert the key numbers shown on items in special feature articles.

MAIL POSTAGE PAID CARD FOR MORE DATA

PLEASE PRINT YOUR NAME & ADDRESS

Name _____ Title _____

Company Name _____

Street Address _____

City _____ Zone _____ State _____

September, 1956 **Please send me the following free data**

Free Bulletins (Cont'd)

ankle-support styles, and dress shoe styles, feature a protective steel toe guard for safety on hazardous inspection duties as well as production operations.

Wooden Sole Footwear **648**
Rosco Wooden Sole Shoe Co. A large selection of wooden sole boots, shoes and strap-on sandals are detailed in this illustrated brochure. Information covers sizes and specifications for the footwear which includes foundry, oil refinery, factory and steel mill shoes and boots, asphalt workers' sandals, shower sandals, etc.

Waterproof Footwear **649**
Beacon Falls Rubber Footwear. Waterproof rubber boots, gaiters, socks, and work rubbers for general industrial application are featured in this illustrated, informative brochure. The boots are available in several lengths and styles, including a body boot which protects the lower chest and waist area as well as the legs.

MAINTENANCE

Industrial Incinerator **650**
Alsto Co. Industrial incinerators designed for outdoor use are featured in this 4-page, illustrated brochure. Information includes specifications for the various models available, as well as their application and operation.

Electrical Equipment Solvent **651**
Turco Products, Inc. A 4-page folder describing a detergent-action safety solvent designed primarily for the in-place cleaning of electrical equipment. Also included are comparison tables covering toxicity, flash point throughout evaporation cycle, and evaporation rate of the featured solvent and other commonly used solvents.

Valve & Flange Covers **652**
Neirad Industries, Inc. Illustrated, and in color, this 4-page folder details a line of valve and flange covers for pipeline leaks. Featured is a leak-indicating cover which undergoes vivid color change when contacted from the inside of the cover by a leak.

What's YOUR Problem?

- **Has an accident or fire interrupted production?**
- **Want to know how to prevent it?**
- **Do you need background information on equipment for industrial safety, hygiene, or maintenance?**

As a service to its readers, "Safety Maintenance" will arrange to supply manufacturers literature on the following subjects. Just insert the key number on the Readers Inquiry Card on the preceding page and be sure to fill in your name and address. If you need information on a specific type of product, simply write it in on the Inquiry Card.

Key Number	Subject
	PERSONAL PROTECTION
101	Safety Goggles
102	Face Shields
103	Lens Cleaning & Anti-Fogging Equipment
104	Sweat Band
105	Hard Hats
106	Respirators & Masks
107	Protective Clothing
108	Women's Protective Clothing
109	Safety Belts
110	Safety Gloves
111	Foot Protection
112	Anti-Slip Soles
113	Oil-Proof Soles
114	Welding Helmets
115	Welding Curtains
	FIRST AID AND PERSONAL HYGIENE
120	Protective Skin Cream
121	Skin Cleansers
122	Sanitary Drinking Facilities
123	Athlete's Foot Control
124	Salt Tablets
125	Noise Analysis & Control
126	Antiseptic Medication
127	Burn Medication
128	First Aid Kits & Supplies
129	Stretchers & Litters
130	Resuscitators
131	Eye Wash Fountains
	DUST & FUME CONTROL
137	Carbon Monoxide Control
	FIRE PROTECTION
141	Safety Cans
143	Safer Solvents
144	Degreasing Machines
146	Fire Blankets

Key Number	Subject
148	Watchmen's Control Systems
149	Fire Resistant Hydraulic Fluids
	LIGHTING EQUIPMENT
150	Alarms & Warning Lights
151	Explosion-Proof Lights
152	Electrical Insulation Tester
153	Fluorescent Lamp Guards
154	Emergency Lights
	MAINTENANCE
160	Anti-Slip Floor & Mats
161	Anti-Slip Waxes & Finishes
162	Floor Cleaning Compounds
163	Cleaning Machines
164	Oil & Grease Absorbents
165	Paints
167	Concrete Finishing & Cutting Machines
166	Floor Resurfacing Materials
	LADDERS & HANDLING
170	Ladders & Safety Devices
171	Scaffolds
172	Work Platforms
173	Slings
	GUARDS
175	Machine Guards
176	Power Press Feeders
	EDUCATIONAL AIDS
180	Safety Signs
181	Aisle Marking Equipment
182	Safety Awards & Emblems
183	Employee Safety Guide
184	Safety Tools
185	Work Tables

Postage Will be Paid by Addressee

No Postage Stamp Necessary If Mailed in the United States

BUSINESS REPLY CARD
FIRST CLASS PERMIT NO. 6634, SEC. 34.9 P. L. & R., NEW YORK, N. Y.

"SAFETY MAINTENANCE & PRODUCTION"
ALFRED M. BEST COMPANY, INC.
75 FULTON STREET
NEW YORK 38, N. Y.

Service Dept.

READER'S FREE INQUIRY CARD

for further data on

ADVERTISED PRODUCTS,

NEW PRODUCTS,

FREE BULLETINS & CATALOGS

WHAT'S YOUR PROBLEM?

we took the shock out of scoop loading

by **R. H. GRAVES**
Technical Assistant to Vice President
U. S. Metals Refining Company

A **"load cushioning"** device to prevent hydraulic system breakdowns on a fork-lift truck equipped with a shop adapted scoop attachment is the capstone of a neat sequence of improvements developed by U. S. Metals Refining Company to load hard-to-handle copper ingot bars at its Carteret, N. J. plant.

The device, called hydro-pneumatic accumulator, effectively protects the main hydraulic circuit of the truck from sudden, severe shocks that may occur when a heavy scoopful of shifting ingots is being lifted, moved or emptied. Formerly, the shocks imperiled the main cylinder piston, and breakdowns were much too frequent and costly. The record of results are:

Costs: The method reduced the per-ton loading cost by 86 percent.

Time: The hydraulic scoop equipment has been kept in service consistently, and maintenance of the truck now is at the normal level. Breakdowns and costly repair work resulting directly from the ingot bar problem itself no longer occur. Loading has been speeded up to a practical period. Other loading platform operations now may be scheduled with much more certainty.

Other Advantages: Drivers and shipping department crews like the smoother and essentially safer operations that have resulted. Also, the company believes the less punishing treatment of the truck and a more certain scheduling of the shipping function are important benefits.

(Continued on page 60)

Cost-saving devices are shown in this close-up. Marked by arrow is shock absorbing accumulator. Scoop's extended lip, crescent sides, stringers on bottom should be noted.

Unwieldy ingots are handled easily by this scoop and it tilts back for run to rail car. It is designed for top efficiency in taking on load.

Shifting load is cushioned by accumulator as scoop maneuvers, tilts. Uncushioned shocks bring about main hydraulic cylinder breakdowns.

JUNKIN STRETCHERS

STRETCHER CASE

$23.80 F.O.B. Louisville

YOUR PLANT *NEEDS* STRETCHERS

The Junkin Stretcher Case affords a convenient and compact cabinet for storing the army type stretcher, blankets and first aid equipment. It provides a definite location for the equipment and protects it against the deteriorating effects of dirt and grime. And because it's compact it's a SPACE SAVER too! Comes fully equipped if desired.

JUNKIN SPLINT-TYPE STRETCHER

Construction permits patient to be carried horizontally or lifted vertically without danger from inaccessible locations. Canvas straps and footrests keep patient rigid and comfortable. For complete information write for free descriptive literature.

JUNKIN
JUNKIN ENGINEERED SAFETY
SAFETY APPLIANCE CO.
101 S. FLOYD ST.
LOUISVILLE 2, KENTUCKY

(Use Key # V-15 on Inquiry Card on page 37)

Edited by HENRY M. GROSMAN
Counselor at Law, Newark, N. J.

MEMBER . . . . . Master Superior Court, New Jersey American Bar Ass'n, New Jersey Bar Ass'n, Chairman, Committee on Workmen's Compensation, New Jersey Bar Ass'n National Federation Insurance Counsel Past Commander, American Legion, Post 10, ... Newark, N. J.

FALL ON STAIRS—After Working Hours

Claimant was improperly denied compensation for injuries sustained when he fell down a flight of stairs after he had punched out for the day and was on his way to the company-owned baseball field to practice with the company team. The court, on appeal, ruled that the injury arose out of and in the course of claimant's employment. Course of employment does not begin and end with the actual work which the injured employee was hired to do, but covers the period between his entering the employer's premises at a reasonable time before beginning his actual work and his leaving the premises within a reasonable time after his day's work is done. The fact that the claimant intended to practice soft ball before returning to his home was wholly immaterial. Reversed.

GREENWAY v. NATIONAL GYPSUM CO. Oklahoma Supreme Court. No. 37,048. March 13, 1956.

HEARING LOSS—"Scheduled Loss" Coverage

An award of compensation under the Longshoremen's and Harbor Workers' Compensation Act for a loss of hearing which resulted from the claimant's employment for 15 years as a boilermaker was proper. Even though it was alleged that the injury did not result in any incapacity of the claimant to earn the wages he was receiving at the time of the injury, the loss of hearing was one of the "schedule losses" set forth in the Act. The court held that, as to any schedule loss, there was a conclusive presumption of loss or reduction of wage earning capacity. Affirmed.

BETHLEHEM STEEL COMPANY v. CARDILLO. United States Court of Appeals, Second Circuit. No. 23819. January 11, 1956. Appeal from United States District Court, Eastern District of New York.

EYE INJURY—Aggravation of Pre-existing Condition

An oil company employee was properly awarded compensation for loss of vision where the evidence was sufficient to sustain the finding that the substance which was thrown into claimant's eyes aggravated a pre-existing condition and resulted in total and permanent disability. The court ruled that where an accidental personal injury, arising out of and in the course of employment, aggravates and lights up a pre-existing physical condition, the injured employee is, nevertheless, entitled to compensa-

tion. The court further ruled that it would not review conflicting evidence and determine the weight and value thereof where the award of the commission was supported by competent evidence. Affirmed.

JONES OIL CO. v. COLE. Oklahoma Supreme Court. No. 37, 045. April 10, 1956.

STATUTE OF LIMITATIONS—Claimant's Knowledge of Other Injury

Claimant was properly denied compensation for a wrist injury sustained in a fall from a scaffold where he failed to file his claim within one year from the date of the accident. The court ruled that where a claimant, at the time an award is made for an accidental injury, has knowledge of an injury other than that for which he is being compensated, and fails to assert any claim for compensation for such injury within one year after the original accident, he may not thereafter be permitted to recover compensation for such injury. The court further ruled that the fact that the claimant exercised his judgment and decided that the injury was not serious did not take him outside the statute of limitations. Affirmed.

TOMBERLIN v. GENERAL AMERICAN TRANSPORTATION CORP. Oklahoma Supreme Court. No. 37, 052. April 3, 1956.

Standard for Rigid Polyvinyl Chloride

The Commercial Standard for Rigid Polyvinyl Chloride Sheets, CS201-55, is now available, according to an announcement by the Commodity Standards Division of the U. S. Department of Commerce. Copies may be purchased from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., for ten cents each.

The establishment of the Commercial Standard was proposed by the Society of the Plastics Industry. It covers physical and chemical properties, and methods of test for high impact and normal impact chemical-resistant rigid polyvinyl chloride plastic sheets.

Got a DUST PROBLEM?

YOU NEED A . . .

DUPOR No. 46

U. S. B. of M. APPROVED RESPIRATOR

Big 46 sq. in. filter guards against all toxic or poisonous dusts. Guards against pneumoconiosis or silicosis producing dusts. Full panorama visibility. Can be worn with goggles or glasses. Maximum protection at economical low cost! Order sample today, $3.25 postpaid.

H. S. COVER, P.O. Box 2508
South Bend 14, Indiana

(For details, use Key # V-16 on card on page 37)

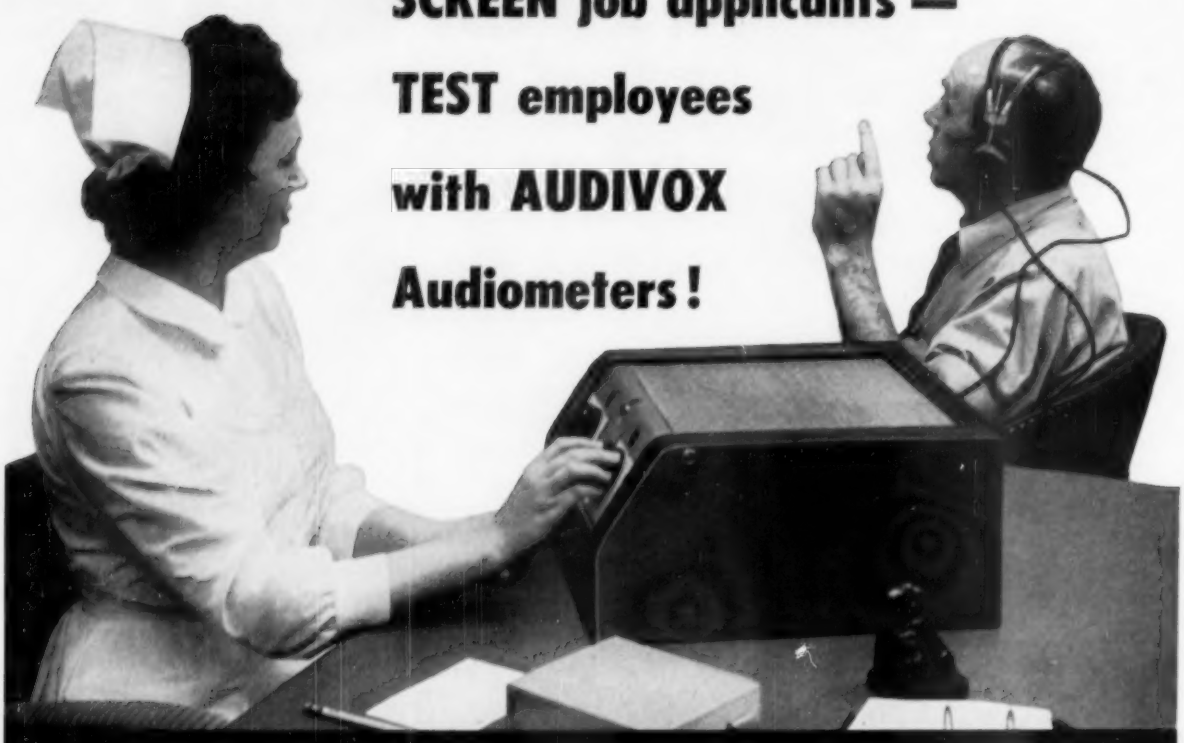
Ventilation Manual

The new and enlarged fourth edition of the "Industrial Ventilation Manual" is now available. The volume is the official publication of the American Conference of Governmental Industrial Hygienists and its recommended practices are approved by federal, state, and municipal industrial hygiene departments.

The manual combines the practical experience of ventilation engineers throughout the country. It contains all the information needed for the complete design of industrial ventilation systems and is printed in a simple and easy-to-read form.

Copies are available at $4.00 (with discounts for quantity orders of 25 or more) from: Committee on Industrial Ventilation, P.O. Box 453, Lansing 2, Mich.

SCREEN job applicants — TEST employees with AUDIVOX Audiometers!

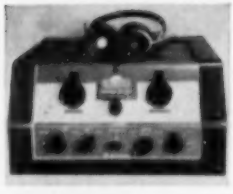


Audivox Instruments protect your Company from Deafness Claims — Curb Needless Accidents.

Now Audivox, pioneer with Bell Telephone Laboratories in the development of audiometers, brings you two accurate new electronic tools to measure hearing power. With these invaluable, *inexpensive* "hearing yardsticks," you can *screen applicants* for prior hearing loss, test *employees* for post-employment losses.

An Audivox screening-testing system is your company's best protection against "deafness" claims . . . needless accidents . . . and inefficiency on the job.

Get the facts about *both* Audivox Audiometers, Models 7 and 8. Mail the coupon *now*.



FOR DIAGNOSIS

Model 7 BD — Sensitive check model Audiometer measures hearing loss in db at discrete frequencies from 125-8000 cps. Bone receiver, microphone, masking, and other accessories available. Audivox supplies audiometers to VA Hospitals and Clinics. Can be recalibrated locally.

FOR SCREENING

Model 8 — Portable Audivox Audiometer goes *anywhere* to screen your applicants. Accurately measures hearing loss in db from 250-8000 cps. Group screening equipment available for up to 40 individuals.

audivox

Successor to *Western Electric* Hearing Aid Division

AUDIVOX INC., Dept. Z, 123 Worcester St., Boston, Massachusetts:

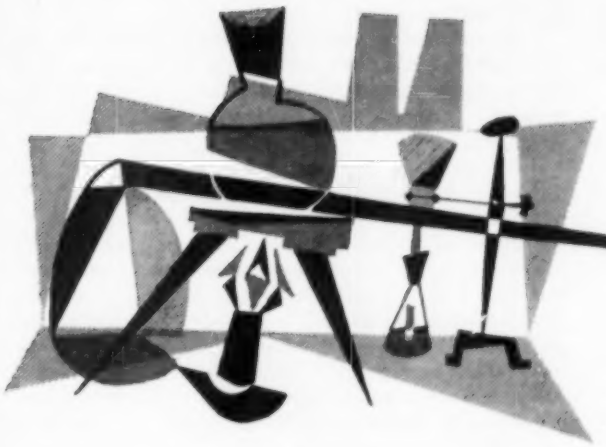
Please send me FREE detailed information on Audiometers by Audivox.

NAME _____

STREET _____

CITY _____ STATE _____

(For details, use Key # V-17 on card on page 37)



industrial hygiene

Management, Medicine and the Future

Edited in cooperation with
OCCUPATIONAL HEALTH INSTITUTE
Educational affiliate of
INDUSTRIAL MEDICAL ASSOCIATION

by **SAMUEL L. H. BURK**
Director, Industrial Relations Division
National Association of
Manufacturers

The medical profession has made many contributions to our way of life. Possibly one of its most significant achievements in the past half century is the prolongation of human life and thus, the conservation of a most precious national asset—people and their skills and experience. We are greatly indebted to the men of medicine who make it possible for all of us to remain active and productive for a greater proportion of a longer life.

Assistance Vital Need

In the years ahead, we shall face great problems in industry, not the least of which will be those of human relationships. We will vitally need the assistance advice, and cooperation of our industrial physicians. They can make a substantial contribution in this area as well as in their prime task of preserving life and building health.

Our medical men are not the only ones who have made progress. Our scientists, engineers, and designers have brought us to the verge of an era of vastly expanded opportunities in every field.

By the end of 1975, our country may have a population of close to 220 million. We will need billions of dollars worth of more food, clothing, housing, schools, transportation, communications and all other necessities and luxuries of modern life. To maintain our present standard and to improve it at a faster pace than in the past 50 years, every member of our work force must become much more productive. Obviously, this problem has many facets. Some of them are technical; some financial; and some lie in the fields of politics, economics and labor relations.

Engineers, builders and investors can provide the tools and equipment necessary to increase productivity. But another vital element is necessary. We must have people to build, to operate and to maintain these new machines. Further, we must provide incentives to stimulate the will and the desire to work and to develop the concept of mutuality of interest so fundamental to the growth of sound employer-employee relationships.

Can Conserve Work Force

Our industrial physicians can do much to help us here. They can play an important role in conserving the work force and keeping it at top efficiency and health. They can help us develop the kind of employee attitude that makes for full utilization of these new machines and methods.

Our medical people can do much—but we cannot expect them to do our job. Management's personnel policies and practices must be sound, its wage structures fair and equitable, and, most important, it must know and practice good human relationships.

Our Medical Directors cannot solve our labor-relations problems; they cannot eliminate absenteeism; they cannot stop accidents and they cannot make diligent workers of the indifferent.

Then how can they help?

Continued Support Required

First, we must remember that management can obtain no benefit until the objective of the program—to promote the health and the well-being of the employee—is achieved. We cannot afford to be penny-wise and pound-foolish here. The program must be adequate, and it must have the full and continued support of management if the benefits are to be obtained.

With an effective program, we can expect to see some results and while they rarely can be measured in dollars and cents, there is no doubt that they exert a very happy influence upon the profit and loss statement.

Consider these actual or potential benefits to employer and employee:

1. Absenteeism can be reduced. An industrial medical program cannot eliminate absenteeism, but a good one can strikingly reduce over-all absenteeism.

2. Selection and training costs can be reduced, potential liabilities avoided, and employees protected. The preplacement physical examination combined with careful job placement can be a highly effective cost cutter. Less time, effort and expense in training the employee to do his job will be spent if it is discovered before employment or not long afterwards that the employee's physical capacities are not equal to the physical demands of the job.

When we think of the costs incurred in properly training a new employee, the cost of determining physical fitness before actual employment fades into insignificance.

3. Compensation costs are reduced. Workmen's compensation is expensive and an adequate medical program can reduce its cost by assuring that the employee receives prompt and adequate care.

We are all aware that in many states the employer is required, by law, to pay for any aggravation of a pre-existing disability or disease. The need and the advantage of a medical program are obvious.

4. Accidents, and the attendant costs in human suffering can be reduced. A healthy, well adjusted employee is much less likely to have accidents. There can be no question but that the industrial physician can do much to detect and assist the accident-prone employee.

The whole problem of mental hygiene has not received the consideration in industry which it deserves, and I think that we all can express the hope that medical science will be able to devote increasing attention to the field of industrial psychiatry.

5. Broader opportunities for employment of the physically handicapped will be opened. Studies leading to expansion of such opportunities can be greatly aided by sympathetic attention from the industrial physician.

Most managements contemplate these potential dividends with considerable enthusiasm but often overlook or regard as a by-product a major benefit—the effect of an adequate medical program on employee attitudes. The improvement in employee morale that they may be obtained as a result of an adequate medical program is a goal for which management should consciously strive. The mere establishment of the facilities and the employment of personnel for a company medical program is proof to the employees that management is interested in improving and protecting their health.

Make Objective Plain

The development of this aspect of the medical program is one which can best be solved by the company itself, but I think that a few generalizations can be made. First, every employee should be made aware of management's major objective in establishing the program—the protection of the employee.

Second, the medical department can become an addition to the chain of communication and it can become an accurate and reliable barometer of changes in employee attitudes.

These are real benefits. True it is difficult to express some of them in terms of dollars and cents, but their cumulative effect is excellent.

Medical Directors' Duty

The Medical Directors, too, have a duty. Management, which bears full responsibility for decisions on medical policy and the type and extensiveness of medical service has an understandable desire for real and concrete evidence to justify major medical proposals to their owners. The medical director has to provide the information and recommendations to assist management in the formulation of policy not only with respect to in-plant medical problems, but with respect to outside developments which may affect management's decisions in other areas. For example, information available to the medical director can be pertinent in evaluating the effectiveness of: employee benefit programs such as hospitalization and surgical plans; local health problems; the community's health needs and services; the medical aspects of proposed legislation and whether it be beneficial or represent unwarranted federal encroachment in fields best handled at the local level. These are but a few examples of areas in which the medical director can contribute to his people, his employer and the community.

Together, management and medicine can do much to ease the problems of the future and bring the goal of a better America closer to realization.

From an address presented at the 1956 National Industrial Health Conference.

New Non-Adherent Dressing

FIRST AID SEEKS
Other Articles in Oct. Nov.

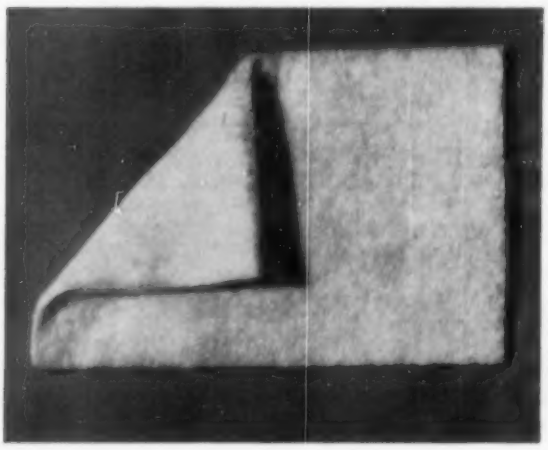
An important first aid development that will be of particular interest to industrial doctors, nurses and first aid teams, as well as the general medical profession and even the public, is a new type of dressing for wounds. As an absorbent but completely non-adherent dressing, it answers a long-felt need for a wound dressing that would promote healing and also provide greater comfort for the patient.

Paradoxical as it may sound, the new dressing is fully absorbent and at the same time non-absorbent. It not only keeps wounds dry but it does not stick to the scab or healing tissue. Gone is the agonizing pain when dressings are ripped or torn from open wounds. In fact, it comes off almost automatically and is said to have caused no bleeding in 99 percent of the cases in which it has been used.

Includes Three Elements

The new dressing was developed from a combination of recent products of plastics and cellulose research. Actually, the dressing includes three elements which are bonded into a single unit or bandage strip:

1. a non-woven highly-absorbent cotton fabric, which is sealed to
2. a plastic, non-wettable film, which is precisely pierced with
3. perforations which are big enough for rapid permeation of drainage, but small enough to exclude granulating tissue that makes a gauze dressing cling to an open wound.



Method of Application

The plastic film or shiny side of the dressing is placed next to the wound, with the soft cotton fabric surface on the outside. The wound fluid or discharge is sucked up through the perforations by a pump-like action of the highly capillary cotton fabric, which functions like thousands of tiny aspirators keeping the wound site dry. The fabric's absorbent capacity is so high that it holds the wound discharge and does not let it drain back onto the wound area.

The end result of the new surgical dressing, the dream and hope of doctors and nurses for centuries, is said to be a drier, cleaner, healthier wound that heals faster and better.

Test Results Good

Over two years of experimentation were made with the dressings in animal research and in extensive clinical studies on human beings. In mid-western hospitals they were applied to the wounds of 918 patients, of which 431 were major cases and 487 minor. They have been used on accident wounds as well as abdominal operations, perforated duodenal ulcers, skin grafts and other major surgery.

In the study of the 918 hospital patients, the new dressing was successful in every case except eight, which were extreme. Examination of these eight showed certain extraordinary conditions, such as incomplete absorption of thick, almost solid, pus discharge from radical mastectomies and an unusual case of gangrene, yet the dressings did not stick even to these wounds.

The clinical record, however, is more than just statistics and factual case histories. It reflects human values that cannot be measured by graphs or charts:

There was the startled surprise of the elderly surgeon with half a century of experience when he removed the dressing, without soaking and without pain, from the stump of an amputated toe.

Easy Removal Relief

There was the small boy with the burned arm, biting his lips and grimacing as he braced himself to endure the removal of his bandage, only to laugh in relief when the dressing came off so easily.

There was the astonishment of a leading surgeon who tried the dressing on a massive skin graft, hoping for an 80 percent "take" and getting a 100 percent "take."

There was the completely successful eye operation in California, believed to be the first time that, in this type of optic surgery, a surgeon applied a dressing that did not adhere to the wound.

Order Change of Dressing

Then there was the story of the samples of the new dressing that were left with a hospital for trial. The manufacturer of the dressings had advised that the dressings should not be used on third-degree burns since there had not been sufficient research at that time on their use for these very specialized wounds. The hospital, however, switched to the new sample dressings on a third-degree burn case, a young girl whose frequent dressing changes brought on excessive suffering. After a couple of changes, the hospital observed that the patient's pain was greatly alleviated and ordered a case of the dressings.

The net result of the research and clinical testing is that the dressing performs total function on the therapy of healing. It protects wounds from external harm and from trauma and infection. By keeping the wound dry, it promotes natural healing.

In Variety of Sizes

The company that developed and is manufacturing the new dressing is making it available in a variety of shapes and sizes. Of particular interest to industrial first aid personnel is the fact that the non-adherent dressings are also being distributed in the unit type of first aid carton by a safety supply house. When a doctor removes a first aid dressing which has been applied by a nurse or other first aid personnel, the removal is equivalent to a re-dressing in a hospital, and the use of a non-adherent first aid dressing simplifies the task for both doctor and patient.

Editor's Note: Sources for further information about the new dressing can be obtained on inquiry to the Editor.

Pres-Vac SHEET LIFTER...

Makes Separation and Lifting EASY by AIR!

ONLY $32.00 F.O.B. FACTORY

Delivered from stock with 5 inch Neoprene Cup, Aluminum Handle, 96 inch Hose and Pressure Regulator—ready to connect to air line.

Speeds Up Lifting and Handling
- SHEET STEEL
- SHEET GLASS
- COMPOSITION BOARD
- PLYWOOD
- BOXES and CABINETS

Any Flat Surface Object

PISTOL GRIP TRIGGER ACTION makes lifting and handling of any flat surface material or object EASIER . . SAFER . . . FASTER.

Used throughout industry on the Production Line and in Warehousing.

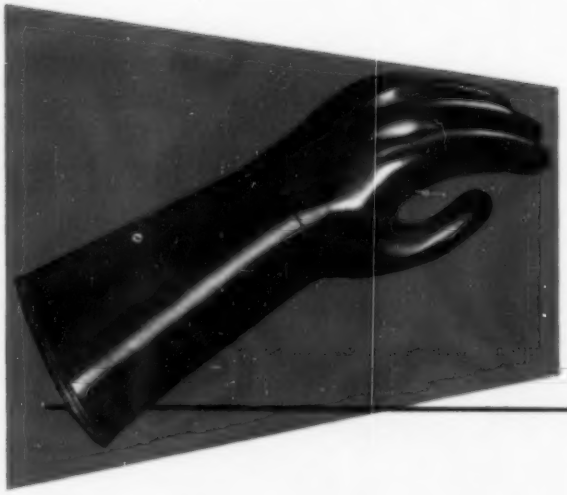
Pays for itself in many ways.

Order this Low Cost Production Aid . . . TODAY!

• Write for Literature

F. J. LITTELL MACHINE CO.
AIR DIVISION
4187 RAVENSWOOD AVENUE, CHICAGO 13, ILL.
District Offices, Detroit and Cleveland
Also AIR BLAST VALVES • PRES-VAC SAFETY FEEDERS

(For details, use Key # V-18 on card on page 27)



Designed to give EXTRA protection!

HOOD reinforced GAUNTLET

No. 7703 Hood's new No. 7703 gauntlet, made for general industrial use, puts special emphasis on forearm protection. This gauntlet has an exclusive thumb crotch reinforcement and a heavy bind on the 6" cuff. Industrial weight, 14½" over-all, and fully Neoprene coated.

Write today for free Hood Glove Guide—shows you how to choose the RIGHT glove for EACH job.

New HOOD "B-41" Butyl Gloves

Protection Against Acids

Protect workers' hands from acids, also lessen danger of injury by absorption. Flexible, comfortable yet rugged and long-lived.

HOOD RUBBER CO., WATERTOWN MASS.

a division of the B. F. Goodrich Company

RUBBER • NEOPRENE • PLASTIC COATED INDUSTRIAL GLOVES

(For details, use Key # V-19 on card on page 37)

Noise Abatement Symposium

Each year the National Noise Abatement Symposium brings together several hundred scientists, engineers, architects, manufacturers, physicians, and civic authorities to study the effects, measurement, and control of noise. The program is planned to present a broad picture of the problems of noise, and to provide information on current trends and achievements in the field.

To Be Held Oct. 11–12

The 1956 NNAS, the seventh consecutive annual symposium, is sponsored by Armour Research Foundation of Illinois Institute of Technology, Acoustical Society of America, American Society of Safety Engineers, National Noise Abatement Council, American Society of Planning Officials, American Industrial Hygiene Association, and Acoustical Materials Association.

14 Papers Scheduled

This year there will be fourteen papers covering the following subjects: Quieting Machinery, the Noise Creator; Hearing Loss Problems; Quieting a Noisy Environment.

The registration fee for the symposium is $15. Address inquiries to: Guy J. Sanders, Armour Research Foundation of Illinois Institute of Technology, 10 W. 35th St., Chicago 16, Ill.

Two Safety Data Sheets

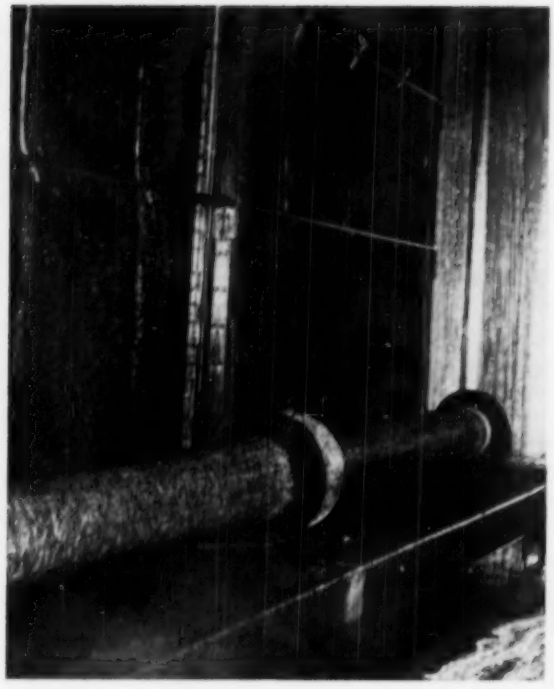
Publication of two new safety data sheets, Aluminum Chloride, Anhydrous, (SD-62) and Toluene (SD-63) has been announced by the Manufacturing Chemists' Association.

Latest additions to a series of safety data sheets, the booklets give properties and essential information for the safe handling and use of the two chemicals, including material on shipping containers, storage, waste disposal and health hazards and their control.

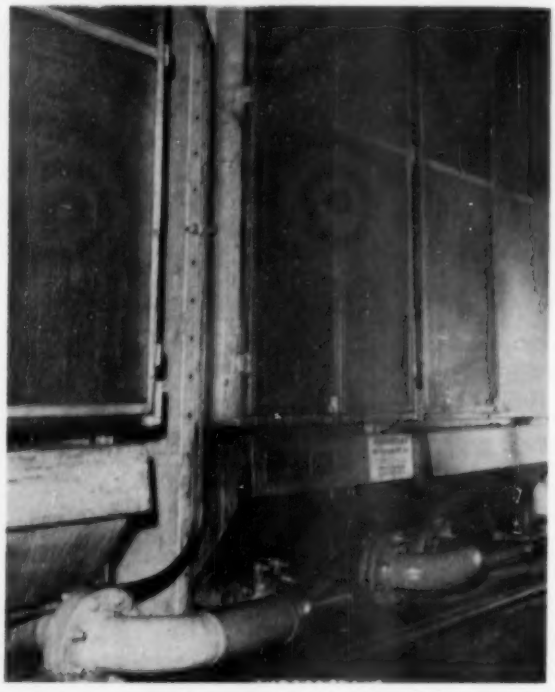
Although hazards exist, both aluminum chloride, anhydrous, and toluene can be handled, shipped and stored safely provided the employees involved are familiar with the recommended precautionary measures.

Copies of chemical safety data sheets, SD-62, Aluminum Chloride, Anhydrous, and SD-63, Toluene, are available from the Manufacturing Chemists' Association, 1625 Eye Street, Northwest, Washington 6, D. C., at 30 cents each.

the why and how of industrial



FIRST STAGE OF EXHAUST AIR CLEANING: FILTER—This glass wool filter removes the larger particles of oil mist, coolant and uranium. The filter media is fed from a long roll, exposing about a foot of clean media per day. Sludge which settles on floor is drained to a central sump, then pumped to treatment station.



ELECTROSTATIC PRECIPITATOR: FINAL EXHAUST AIR CLEANER —The air first passes electrically charged wires so foreign material acquires electric charge, and then passes oppositely charged plates which attract the particles. Plates are on continuous chain. Adhered dust is washed off and plates enter oil bath for oil recoating.

by **WALTER S. SHURKIN**
Chief Ventilation Engineer
National Lead Co.
Cincinnati, Ohio

Perhaps the best definition of ventilation is the control of the quality, quantity and distribution of air, both hot and cold. But:

1. Why does industry use ventilation?
2. What types of ventilation are available?
3. How does one determine the need for ventilation and select suitable types?

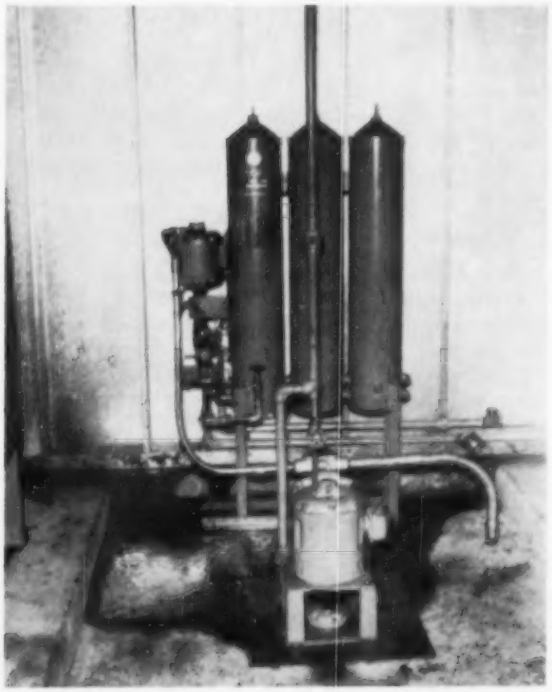
With the growth of labor unions and the steadily diminishing available labor force, industry realized that a comfortable environment was necessary not only to attract labor by having better working conditions, but also to prevent men from walking out on operations that are dusty, smoky, odorous, irritating or conducive to industrial diseases and/or accidents. A clean air environment is necessary also for better productivity of the men employed. Comfort ventilation in its broadest scope takes in the simultaneous control of all indoor air environmental conditions. This includes the control of temperature, humidity, air velocity, air quantities and thermal radiation. Comfort ventilation in offices, laboratories and similar buildings is more a problem of actual air conditioning than of ventilation.

The Industrial Hygiene Engineer considers not only the comfort of the workers, but also the actual physiological damage that can be done to the workers in extremely hot and humid or cold environments.

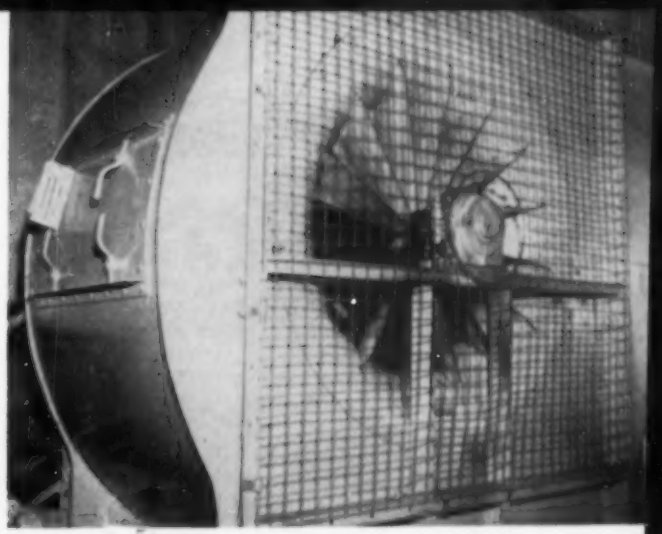
Perhaps the greatest use and need for ventilation is the control of toxic dusts, vapors, mists, gases, smokes, and fumes. Each of these terms represents a specific type of contaminant:

(1) **Dusts** are particles formed by mechanical and disintegrating processes such as blasting, grinding,

ventilation



BACKGROUND—Oil filters, which remove sludge from the viscous oil bath in the electrostatic precipitator. The filter cartridges are replaced periodically and valuable material recovered. FOREGROUND—Sump pump for pumping sludge and filter washings to treatment plant to remove uranium and stop stream pollution.



EXHAUST FAN—This 33,000 cfm fan exhausts air from 20 machines handling pyrophoric material. The fan is installed in back of the air cleaning equipment to prevent deterioration and wear of the fan. Note the clean screen and louvres of fan, showing high degree of efficiency in cleaning foreign material from exhaust air.

crushing, drilling and rubbing. The size range of dust is large, going from submicroscopic to visible particles.

(2) **Fumes** are generated by physico-chemical processes involving combustion, sublimation and metal distillation. The size range of fume is below one micron. Because of the small size, fume tends to flocculate due to Brownian movement.

(3) **Smokes** are the tiny particles given off when carbonaceous materials are burned. Smoke ranges in size with fume. It is measured in terms of blackness or optical density.

(4) **Mists** and fogs result from entrainment of liquids in an air stream or the condensation of vapor on suitable nuclei. The size range is the same as dust.

(5) **Vapors** are gases which are above their critical temperature. Vapors are given off by volatile liquids such as alcohols, chlorinated hydrocarbons, etc.

(6) **Gases** are fluids that will fill any container homogeneously and with equal density.

The human body takes in ten times the weight of air via the respiratory organs as it does food and drink via the alimentary canal. The lungs have a surface area of approximately an acre, and only a one-cell layer of protoplasm separates the air in the lungs from the blood in the body. During periods of exercise or emotional distress, the blood in the body can make a complete circuit from the heart to the lungs back to the heart, throughout the body and back to the heart in less than a minute. Any deleterious or toxic materials can thus enter and poison or damage any or all parts of the body in less than a minute's time.

The toxic substances that we breathe have long term effects as well as effects that are instantaneous. Silicosis, asbestosis and all the other forms of pneumoconiosis are examples of industrial diseases contracted by the breathing of minute quantities of various dusts over long periods of time.

Many people suffer from constant headaches, nausea, listlessness and general discomfort because the environment in which they work contains minute quantities of carbon monoxide, cleaning solvents or many other vapors and gases. At higher concentrations most of the solvents and gases in this category are deadly. At one time carbon tetrachloride was used for degreasing and metal parts cleaning. After many complaints of illness and many deaths, the use of carbon tetrachloride was curtailed in the business world.

Strictly speaking, this has nothing to do with ventilation; but the first corrective measure an industrial hygienist tries to take is the substitution of a toxic material with a non-toxic or less toxic substance than the original material. If substitutes cannot be found, isolation of the toxic generating process is tried. If the above solutions cannot be used, ventilation will probably help the situation.

Control of explosive and/or flammable dusts, vapors, mists, gases and fumes is of equal importance as any

plant owner or safety engineer can tell you. Many a man who has seen his plant go up in smoke, with the usual resulting loss of life and property, has regretted not taking better preventive measures.

Recovery of valuable product and/or valuable process material comes high on the list for the need and use of ventilation. Many industries depend for a profit showing in their books on the product which its ventilation system captures and sends back into the process stream. In several operations at the site where I am employed, the ventilation system captures as high as 20% of the total product. The AEC pays $3.50 a pound for uranium oxide in uranium ore of 0.2 of one percent. By the time this ore is concentrated and processed, the price of the uranium is considerably higher. Preventing the loss of uranium to the atmosphere saves the taxpayers thousands of dollars a year. Furthermore, the monetary value of this uranium does not compare to the value this uranium has in the form of defense of our country.

Proper ventilation can be used to prevent rapid wear of expensive equipment and can cut the cost of maintenance of this equipment. Any rolling or rotating equipment will wear out bearings and bushings very rapidly if used in a dusty atmosphere. Dusts generated from grinding operations or from the trueing of grinding wheels are particularly bad offenders.

Many industries such as the chemical companies producing acids, bases and corrosive gases need ventilation in areas where motors and machines are operating. Replacing corroded motors caused by acid mists and gases in the air can become an expensive proposition.

A combination of ventilation and air cleaning is needed to prevent the pollution of the plant and neighboring areas. Every day there is a greater clamor from outraged citizens for a more rigid control of the industries that discharge polluting materials. The time is coming when industry will no longer discharge smoke, dust, poisonous gases and vapors from its stacks. Industry will be called on more and more to clean up and control its share of atmospheric pollutants.

Industry in and around Pittsburgh, Pennsylvania, has shown what can be done in better pollution control. Pittsburgh has, in a period of five years, become one of the cleanest industrial cities in the country after having had the reputation of being one of the dirtiest.

Applies to Radioactive Material

An additional comment should be made about radioactive dusts and gases. Everything that has been said about other toxic and/or valuable dusts and gases can be said about radioactive material with the exception that the controls of radioactive substances are usually more rigid than those for any other commercial product.

Natural uranium is one of the least expensive and least toxic of any of the known radioactive materials.

GUARD HANDS ON EVERY JOB . . . GET *GRANET* GLOVES

Give your workers the protection they need in handling chemicals, oils and abrasive materials. Give them GRANET gloves — fully coated or palm coated with neoprene, rubber, or plastic for positive, safe, non-slip grip. Ask your distributor.

GRANET gloves are made for every job, in a complete range of styles. They outwear ordinary gloves yet cost no more. Test GRANET gloves in your plant now, without cost or obligation. State type of use, so that we can provide correct glove.

GRANET THE GRANET CORP.
29 LORING DRIVE, FRAMINGHAM, MASS.

(For details, use Key # V-20 on card on page 37)

DON'T TAKE CHANCES
wear light-weight
MARTINDALE DUST MASK!

For NON-TOXIC DUSTS EXCEPT FREE SILICA

It's foolish to breathe dust and dirt when it can be avoided in thousands of instances by using a face-fitting Martindale Aluminum Mask and replaceable cotton filter pads.

In factory, store, feed mill, etc., these masks offer excellent protection against over 400 dusts such as wood, coal, grains, rust, paper, insect powders, etc.

Made of soft rolled aluminum, masks weigh less than ½ oz. They permit free speech, clear vision, easy breathing. Only clean gauze touches the skin. WORKERS LIKE THEM.

MARTINDALE PROTECTIVE MASKS $.30 each
No. 1 Refills (Standard wt.) .02 each
No. 2 Refills (Heavy wt.) .02½ each

Write for quantity discounts.
MARTINDALE ELECTRIC CO.
1397 Hird Ave., Cleveland 7, Ohio

(For details, use Key # V-21 on card on page 37)

WRITE FOR LATEST CATALOG SHOWING
SAFETY SIGNS FOR ALL PURPOSES

STANDARD SIGNS, INC.
3192 E. 65th St., Cleveland 27, O.

(Use Key # V-22 on Inquiry Card on page 37)

test yourself on this auto seat belt quiz!

1. What is the average "G loading" a belt must withstand in just a 30 mile per hour crash, with 18" stopping distance?

2. The so called Nylon-Rayon webbing is ?% Nylon and ?% Rayon?

3. In selecting a buckle for your safety belt, what are some of the features to look for?

4. Is it safe to attach an auto safety belt to the floor of a car, rather than the frame?

5. Is fatigue brought about by wearing a safety belt?

6. Should manufacturers claims be accepted, or should proof be furnished by an independent laboratory?

Answers

1. 20:1 (this is 20:1 times a person's weight)
2. 10% Nylon and 90% Rayon.
3. Metal to metal construction — 5,000 lbs. minimum tensile strength.
4. Yes (Laboratory test proven)
5. No, Driving fatigue is greatly reduced.
6. Independent lab. (Better yet, test various belts yourself. Write to us for inexpensive testing methods.)

For more comprehensive information on these, and other important questions on auto belts, write for complete pamphlet to:

ROSE MFG. CO.
2700 W. Barberry Pl.
Denver 4, Colo.

Safe-Hi DENVER

(For details, use Key # V-23 on card on page 37)

The accepted maximum allowable concentration of uranium dust in indoor plant air is 0.05 milligrams per cubic meter of air. In order for a plant 300′ x 100′ x 30′ to remain below the maximum allowable concentration, the uranium dust content in the air must not exceed a thimble full. In a plant that is crushing and grinding uranium ore or handling uranium compounds in the form of a powder, keeping below the maximum allowable concentration would be impossible without proper ventilation systems.

Types of Ventilation

Natural Ventilation: During the summer months, in a plant processing non-toxic and/or non-explosive materials, the only ventilation required would be open windows and doors.

In buildings housing hot processes, monitor type roofs are provided to produce a chimney or gravity effect. Cold air coming through the base of the buildings constantly replaces the warm air that leaves through windows placed in the monitor. Care must be taken to prevent short circuiting of air which will reduce the cooling effect of the monitor.

Many petroleum and chemical plants located in climates, where freezing is rare, are built without walls or roof. This deters any serious build-up of toxic and/or explosive material in the area. If an explosive mixture is released suddenly and is detonated, the damage resulting is usually not serious as the structure has no walls that would permit large pressure build-ups.

General or Dilution Ventilation: In areas which are colder most plants need a roof and walls for the comfort of their workers and to protect the process and process material. In industry that requires only comfort for its workers, general or dilution ventilation can be used.

The principle of general or dilution ventilation is the bringing in of air in enough quantities so that the introduced air will dilute the concentrations of dusts, temperatures or humidity to levels which will no longer be injurious or uncomfortable to the men working in the plant involved. The diluted air is discharged through other openings in the building. Care must be taken to prevent the dilution air brought in from short circuiting, thus by-passing the dusty, hot or humid area.

General ventilation involves handling of large volumes of air without positive control. The heating of the large volumes of air needed for general ventilation often is very expensive thus ruling it out as an economic means of toxic dust control.

Exhaust Ventilation: Exhaust ventilation is the type used for positive control of toxic and/or explosive materials. Either a damper or dust-sized balanced system can be used. A dust sized balanced system should be used if the material to be controlled is very toxic. Although a design using dust sizing takes more time and the volumes of air used are slightly larger, it is

the preferable of the two methods because of better control and less maintenance caused by settling dust and abraided dampers and ducts.

An exhaust ventilation system consists of a hood, ductwork, blower, air cleaner and a stack.

The purpose of the hood is to enclose, as much as possible, the toxic material generating process. If enclosure is not possible, the hood should be so designed that enough air at high enough velocity is induced into the hood to prevent any toxic material from escaping into the plant atmosphere. The hood must be designed so that control is maintained with minimum air quantities. The correct hood design is the most important component of an exhaust ventilation system. If the hood is not designed correctly, the rest of the system is useless.

If the process generates dusts with a large size range, a chip trap should be placed after the hood. This will settle out large chips which would otherwise settle in the ductwork, causing plugged ducts and excessive maintenance.

For explosive dusts, fumes, solvents or gases, large enough amounts of air must be used to dilute the explosive material to below one-fourth its lower explosive limit. The air should be cleaned as soon as it passes through the hood. Water curtains, scrubbers, filters and absorbing or adsorbing material can be used for this purpose. A study should be made to use the correct collector for the material being collected.

Hoods are connected to branch ducts which in turn are connected to a main duct. This main can either be discharged to the atmosphere or to an air cleaning mechanism.

The air blower used can be placed anywhere in the line, depending on the material in the air. In conveying toxic, corrosive or abrasive laden air it is preferable to place the blower at the discharge end of the collector so that the entire exhaust system is under a negative pressure. This eliminates any danger that a leak in the system will pollute the plant air, as any leak would be **into** the system, not **out.** Blowers can be made of material that can withstand corrosive and abrasive atmospheres.

An air cleaner or collector is used in an exhaust ventilation system if the dust, solvent or gas in the air is toxic, polluting or valuable, thus warranting the extra expense of an air cleaner. An air cleaner can sometimes cost five times as much as the rest of the exhaust system combined and therefore the cleaner should have a good justification before it is installed.

Collection of dusts is a greater problem than mists, vapors or gases because of its large size range, shapes, densities, and surface characteristics. For dust collection, sometimes collectors are placed in series, starting with a cyclone for collecting large dusts and followed by cloth arrestors for removing smaller dusts. This can be followed by an electroscopic precipitator for sub-micron dust collection. Exhaustive engineering experiments and test should be run before any air cleaning equipment is installed to ascertain whether or not the air cleaner will do the job that it is intended to do.

A common error in designing ventilation systems is mixing of dry, wet and corrosive streams into one common duct and air cleaner. **There is no one air cleaner that can be used to collect dust, gases, mists and solvents.**

The use of exhaust ventilation systems in industry is increasing because of lower operating costs, versatility and positive control. This is true only if the system had been designed by competent ventilation or industrial hygiene engineers.

This leads to a most important problem—the determination for the need and type of ventilation to be used, and where to get help for this evaluation.

The first step is a complete check of all materials and processes in the plant. Not only raw materials, intermediate and finished products, but all chemicals used for processing, painting and cleaning should be checked for toxic, hazardous, flammable and explosive natures.

A visual inspection of the plant must be made. Special consideration should be given to processes such as grinding, screening, dumping, packaging, plating, degreasing, pickling, etc. Places such as the tops of rafters, pipes, etc., should be checked for dust accumulations. If there is an accumulation of dust in inaccessible places; if there are visible clouds of dust, mist, fume, smoke or gas; or if bad, offensive or acrid odors are noticed; if there are complaints of illness, nausea, or respiratory irritations, then there is a good possibility that ventilation of some kind is required.

The proper step to take next is to call in an Industrial Hygiene Engineer for a survey. Air samples of all areas and processes should be taken to determine the actual concentrations of foreign material in the air. The consultant will make recommendations and submit sketches and design criteria for the alleviation of the problems that he finds.

Do not depend on your own judgment for a quick answer to your problems. The scrap heaps in many plants are loaded with well-intentioned mistakes. There are many agencies where one can get advice and answers to ventilation problems. These include: 1. Federal, state and municipal health and labor agencies; 2. Compensation and accident insurance carriers; 3. Industrial hygiene and ventilation consulting firms; 4. Universities; 5. The various manufacturers of air moving and air cleaning equipment.

In summary, there are many reasons for ventilation. These include comfort, process control, equipment protection, toxic material control, explosive and/or flammable material control, prevention of air pollution, and air conveying systems for materials transportation.

There are various types of ventilation that can be used. The type chosen should be the one that will give the best possible results with the lowest first cost, lowest operating costs and lowest maintenance costs. This usually requires a study before a decision is made as to the kind of ventilation equipment to be installed.

If you have a ventilation problem and you don't have the background to cope with the problem, call in competent help. It is no disgrace to get help. The only disgrace is the installation of equipment, using intuition to guide you and then discarding the equipment because it doesn't do the job intended for it.

From an address presented at the 25th All-Ohio Safety Congress.

Everyone Can Be a Better Driver

The Post Office Department's experience since 1953 in organizing and conducting one of the largest safety programs in the nation's history has demonstrated that any driver can reduce substantially his own risks on the highways," Postmaster General Arthur E. Summerfield commented, in releasing highlights of the Post Office Department's 1955 Progress Report on Motor Vehicle Accident Prevention.

"As a result of the Post Office Department's safety program, the postal driver today has become the safest driver in postal history. More than 27,000 postal drivers have earned the nation's highest award —the National Safety Council Award—for establishing accident-free driving records during 1955," Mr. Summerfield noted.

"These results achieved by so many drivers of varying ages, temperaments and experience in widely differing sections of the nation lead us to believe that any person who drives can—by the application of safe driving practices and compliance with local traffic laws and regulations—remove at least 75 per cent of the hazards involved for him in driving on the nation's highways," Mr. Summerfield commented.

The Post Office Department's motor vehicle fleet consists of more than 85,000 vehicles operated by more than 100,000 employees who service city and rural mail routes all over America. The Department is the largest single operator of motor vehicles in the nation. Its vehicles annually travel a distance equivalent to five round trips to the sun.

In 1953 there was a safety problem of huge dimensions involving postal vehicles and drivers. It is estimated that the accident rate for the Department's government-owned motor vehicles operated in metropolitan areas during 1953 was approximately 13 for every 100,000 miles driven.

The Post Office Department's Motor Vehicle Accident Program was launched early in 1954, and was expanded gradually in 1955 into a well-rounded positive program to prevent accidents.

The 1955 Progress Report just released showed that during the last half of 1955, the accident rate for all of the Post Office Department's vehicles used in metropolitan areas was cut to a new all-time low of 4 per 100,000 miles.

"This reduction," Mr. Summerfield stated, "applying as it does to a large organization such as the Postal Service and its large number of drivers, demonstrates, we believe, that any driver can reduce his own chances of damage or injury on the highways. He can acquire the skill and knowledge to protect himself and his family, by learning, and following, the instructions that are readily available from national and local safety authorities.

"However, no one can sit back complacently and feel that he is a good driver and that it is only the other fellow who needs to learn. This is the kind of attitude which has helped to cause the nation's

SAFE · CONVENIENT
DURABLE · LOW COST

BALLYMORE
SAFETY-STEP
LADDERS

FROM 1 TO 8
STEPS

Ballymore Safety-Step Ladders are available in a wide variety of sizes and models to meet working-height requirements up to 11'6". They are easily moved on rollers, but with no danger of "kick-out."

Made of all-welded ¾" steel tubing for maximum strength. Rust-resistant aluminum coating gives a durable, attractive finish. Handrails, optional on 2- through 8-step models, help eliminate fear of accidents. Three treads available: expanded steel, grip steel lath, and rubber-clad steel plate.

Write for specific information to Ballymore Company, Wayne 18, Pa.

BALLYMORE LADDERS

THE STANDARD BY WHICH SAFETY LADDERS ARE JUDGED

(Use Key # V-24 on Inquiry Card on page 37)

appalling death toll on the highways."

In its safe driving efforts, the Post Office Department, Mr. Summerfield explained, has not only tried to assist its drivers in improving their technical skills in driving, but it has laid particular emphasis upon right driving attitudes. He said:

"We encourage the attitude that no driver knows it all, that there is always room for improvement, and for more courtesy and common sense in driving. Many of our people who were good drivers before have expressed surprise over how much they have learned through the safety program. This experience has taught us in the Post Office Department that, with the proper driving attitude and training in the rules of safety, anyone can become a better driver."

• • •

The Maintenance Department of The Chemstrand Corporation's Acrilan acrylic fiber plant in Decatur, Alabama, has received a safety award from the company's insurance carrier. The award was made for their safety performance, especially the safe operation of automotive and other motorized equipment, during the period of May 1, 1952 to January 31, 1956.

• • •

The "President's Safety Cup," a company rotating trophy presented annually, was recently awarded to the Avon Lake, Ohio, plant of the B. F. Goodrich Chemical Co. for having operated 958,595 man-hours without a lost-time accident during 1955. The trophy was last won by the company's Louisville, Ky., plant.

• • •

Dravo Corporation's top safety honor, the President's Award, has been presented to Engineering Works Division's structural steel fabricating shop on Neville Island in Pittsburgh. Employees of the shop worked 571,045 man-hours since their last disabling injury in April, 1954.

Special awards were also given to the company's Engineering Works and Machinery divisions for "outstanding performance" in safety during 1955.

Engineering Works Division had operated with 1,163,980 safe hours since July, 1955, and, as of March 12, 1956, had accumulated more than 1,600,000 safe hours. Machinery Division performed with exceptionally low injury rates compared to others in its industry.

• • •

Pittsburgh Plate Glass Company employees completed the 1955 calendar year with a lost-time accident frequency rate of 5.3 per million man-hours worked to establish the company's lowest figure on record, according to Thomas R. Donoghue, manager of safety and plant protection. It marks the lowest rate ever achieved by the company during the 35 years for which safety records have been maintained by the company, Mr. Donoghue said.

Despite the 6.9 percent increase in man-hours worked last year, the company posted decreases of 20 percent and 24 percent in frequency and severity rates, respectively, as compared to the 1954 safety statistics.

Mr. Donoghue reported that eight Pittsburgh Plate industrial units have been cited to receive the company's highest safety award, the "Certificate of Honor," for completing 1955 without a lost-time disabling injury. Perfect safety records were achieved by these divisions at the following locations: Glass Division—Ford City and Creighton, Pennsylvania; Paint and Brush Division—Atlanta, Georgia, Paint Division; Portland, Oregon, Paint Division; Torrence, California, Paint Division; Springdale, Pennsylvania (both plant and research center); and Morck Brush Division, San Francisco, California.

• • •

A new record in safe operations of a soap and related products factory was established recently by the Long Beach plant of Procter & Gamble.

The 618 P&G employees here exceeded the former record of 3,745,369 safe man-hours which has been held since April, 1952 by Procter & Gamble's factory in Chicago. In setting the new record, the Long Beach plant worked for more than three years without a single accident serious enough to result in loss of time from work.

• • •

A new, all-time safety record was established by the chemical industry in 1955, the Manufacturing Chemists' Association has announced. Lost-time accidents in the industry amounted to 3.25 per million man-hours worked, the lowest accident frequency figure in the history of the industry and a slight improvement over the previous record of 3.27 established in 1954.

The association announced also that to date it had awarded 331 certificates of safety achievement for 1955 to plants representing 32 companies. The awards are made annually to those plant locations which complete a calendar year without a lost-time accident.

• • •

A perfect safety record for nearly two years—5,500,000 man-hours without a lost-time accident—has earned the main plant of Mine Safety Appliances Company an Award of Honor from the National Safety Council. Receipt of the award was acknowledged by the company during a special "Safety Day" observance. Board Chairman G. H. Deike, Sr., and Vice President E. G. Sanner spoke to employes, thanking them for their cooperation with the safety program and urging continued safe practices.

Following the ceremonies, all plant employes were presented mechanical pencils marked "5,000,000—no lost-time accidents—MSA Pittsburgh 1956."

Earlier the company had received a companion award from the Western Pennsylvania Safety Council. E. J. Hanley, president of the Council, presented a Certificate of Accomplishment to Works Manager K. L. Steele before the start of the Council's annual Green Pennant exhibition baseball game between the Pittsburgh Pirates and the Detroit Tigers.

THE FIRE FRONT

LP Gas Fires

When an ASME tank or ICC cylinder is filled with liquefied petroleum gas, the latter is in the form of a liquid so maintained by its own vapor pressure. If this liquid is spilled or the pressure removed from the liquid, the contents vaporize readily at almost any atmospheric temperature. These vapors when mixed with air in the correct proportions can make a flammable mixture, it is explained in a recent bulletin issued by the National Board of Fire Underwriters.

The limits of flammability of LP Gas in the presence of air vary in accordance with the particular mixture that is used. The chief constituents of this gas are propane and butane. Propane has a flammable range of from 2.2 to 9.5% vapor in air. Butane has a flammable range of from 1.6 to 6.5% vapor in air. Therefore, when considering LP Gases, it is best to consider that the flammable range is from 1.6 to 9.5% vapor in air by volume. This means that a concentration of less than 1.6% LP Gas in air is too lean to flash and burn, while a mixture of more than 9.5% LP Gas in air is too rich to burn. LP Gases have a narrow flammable limit range, but it is wider than gasoline which is 1.0 to 6.0% vapor in air.

LP Gases contain no toxic components such as carbon monoxide and, therefore, the vapors are nonpoisonous. They are anesthetizing, however, when high concentrations are inhaled over a considerable period of time. If breathed in sufficient quantities, the vapors will produce nausea and headache.

There are other characteristics of LP Gases that are important to fire fighting operations. These hydrocarbon gases are heavier than air, propane being one and a half times as heavy as air and butane about twice as heavy as air; thus there is a tendency for them to settle in low places. The flame travel in liquefied petroleum gas vapors in open air is about 15 feet per second, depending upon the atmospheric conditions and the concentration of the gas. Leaks from LP Gas tanks, cylinders and piping can be detected by the odorant in the gas and due to the fact that LP Gas is a refrigerant. This latter mentioned property will show up as a frost on the equipment at the point of leakage or as mist in the air.

Shut-Off Methods

Good fire protection requires that every installation be provided with means for shutting off the supply of gas to a building in case of emergency. The installation of a shut-off valve immediately inside the building, which is sometimes done for the convenience of the user, does not comply with this requirement. Most LP Gas installations are provided with shut-off valves at the container which is normally either adjacent to or a short distance from the building, providing means for shutting off the supply of gas in emergencies at this point. Cylinder systems are equipped with hand wheel shut-offs or wrench shut-offs. A wrench should be provided at each customer location and fire apparatus should be so equipped that a wrench will be available at each fire. There is a type of system where there is no shut-off valve that can be turned off directly. This system is so designed that when the regulator is removed, the valve automatically closes. Another method that can be used to shut off the gas regardless of the type of system involved is to crush or crimp the copper tubing leading into the customer's building.

If it becomes necessary to enter an area where LP Gas vapors have been released, certain precautions should be taken. All sources of ignition should be eliminated. If there is no possibility of oxygen deficiency, a gas mask designated by the Bureau of Mines as Type N or the Universal Type may be used. In an enclosure where there is a possibility of oxygen deficiency, self contained breathing apparatus should be used. Ventilation can be provided by air ejection and induction and small rooms such as pump rooms can be effectively purged of a concentration of LP Gas by carbon dioxide. A fireman trapped in a room in which large quantities of LP Gas vapors have escaped should remember that asphyxiation is possible because of the exclusion of oxygen. Combustible gas indicators should be used to detect flammable atmospheres in suspected locations.

Fires Near Cylinders

An LP Gas container is so designed that if it is exposed to an adjacent fire, excessive pressure due to the heat of the fire will

June Losses Rise

Estimated fire losses in the United States during June amounted to $74,770,000, the National Board of Fire Underwriters has reported. This loss represents a decrease of 14.7 percent from losses of $87,681,000 reported for May (1956) and an increase of 5.6 percent over losses of $70,828,000 reported for June, 1955.

Losses for the first six months of 1956 now total $517,403,000, an increase of 10.1 percent over the first six months of 1955, when they amounted to $469,757,000. These estimated losses include an allowance for uninsured and unreported losses.

open a spring loaded relief valve, or the heat will melt a fusible plug to relieve the pressure. The relief valve is superior to a fusible plug because it will reset itself after a temporary pressure increase. It is possible for a safety valve equipped container to rupture. When flame from one cylinder impinges on another cylinder, above the liquid level, the metal weakens and eventually the tank may rupture. However, hose streams directed against the shell of the tank will cool the metal, reduce the pressure and may prevent rupture.

In some situations involving cylinder fires there may be an opportunity to remove other cylinders from the scene. This can be accomplished by the use of a water fog to shield the fireman moving the cylinders. First, the shut-off valve on the cylinder should be closed, then the cylinder removed to a safe location and placed in an upright position. In an upright position only vapors will be released through the safety relief valve and thereby the pressure will be reduced more rapidly. Should the upper portion of the cylinder including the cylinder valves be covered by a protecting hood which is locked, the lock can be broken by a hammer or axe and the cylinder gas supply shut off as described previously. If the cylinder to be removed is in a system of cylinders, the flexible connections can be disconnected or, if necessary, cut with an axe. If the container is equipped with a fusible plug, the escaping gas should be permitted to burn until the contents are exhausted. If the flame of such escaping gas is extinguished, the unburned gases might accumulate elsewhere and create a worse explosion hazard than if permitted to burn at the original location.

If a fire is adjacent to an LP Gas container but no LP Gas is escaping, efforts should be made to keep the container cool, thus diminishing the possibility of a build up in pressure great enough to open the safety relief valve. If a fire occurs at a large installation such as a bulk plant or an industrial installation, hose streams of water should be used to cool the tank. If possible, any fire around the container which is heating the contents of the container should be extinguished. When the source of heat is removed, the pressure within the container will diminish and the relief valve will close. If gas is escaping at the safety relief valve vent, it should be ignited if to do so creates no further hazard. Such a torch will be safe in that it will burn out when the tank pressure is reduced below the set pressure of the relief valve.

These same principles should be followed in the event of a fire involving an LP Gas tank truck or tank car.

Firemen should learn the location and method of operation of shut-off valves, contents of the buildings and other details pertinent to the fire fighting problem. Then when it becomes necessary to combat such a fire, they will be able to act effectively.

There is no known material or method that will extinguish a fire in a large quantity of LP Gas.

(Continued on page 58)

NEW FIRST AID DRESSING DOES NOT STICK TO WOUNDS AND BURNS!

NON-ADHERENT DRESSINGS

IN DAVIS D-CARTON UNITS

Has thin durable coating of finely perforated plastic bonded to highly absorbent, unoriented cotton. Keeps wounds or burns dry . . . can be removed easily without sticking, without soaking.

Send for Bulletin No. 327

* Reg. U.S. Pat. Off. by the Kendall Co.

SAFETY DAVIS DIVISION

DAVIS EMERGENCY EQUIPMENT CO., INC.

64 Halleck Street, Newark 4, N. J.

(For details, use Key # V-25 on card on page 37)

OAKLAND NAVAL BASE RULE:

"Don't Let the Fire Get Started"

Ever since the first volunteer department hitched a hand pumper behind a team of matched grays, fire buffs the country over have jumped at the fire bell's clamor.

They've raced firemen's rigs to the scene, speculated on probable causes with all the authority of the chiefs, themselves. But the buffs have had little excitement and little cause for speculation at the Oakland, California, Naval Supply Center for a good many years.

For instance, in 1955, the Oakland Navy base held total fire losses on its 550-acre, $60 million dollar plant to pocket cash of $21.65, thereby setting a seven-year record at the Oakland installation. Losses for the entire seven-year period totaled only $1,153.22.

The remarkably low loss figures are all the more noteworthy in view of the fact that the huge Pacific Fleet supply base constantly has on

(Continued on the next page)

NO SPARKS HERE—*Truck gas tank is tested to see if it is grounded, thus spark free.*

FIRE SAFETY STARTS HERE—*At an Oakland Naval Supply Center's indoctrination session on fire prevention new employees hear a lecture on fire safety fundamentals.*

TRAINING THE ANSWER—*Here the Chief Fire inspector demonstrates proper handling of a carbon dioxide fire extinguisher to a service station attendant at the base.*

for safety first and protection that lasts!

TOWER'S

Neoprene Clothing

Wherever personnel safety can be threatened by the lack of adequate protection from greases, oils, water, most acids and chemicals, that's where TOWER'S *extra protective* Clothing belongs. These comfortable, designed-to-fit garments are made of strong, impregnated fabric and are coated inside and out with hazard-resistant Neoprene Latex. Coats, jackets, overalls, hooded shirts, hats and aprons . . . for *every* industrial use. For complete information mail coupon today, or if you have a particular problem, let us know and we'll solve it quickly with the garment best suited to your needs.

for Neoprene Latex Clothing — for Rubber Latex Clothing

MAIL COUPON TODAY!

Please send me folder

Name .....

Address .....

City ..... **State** .....

Please address Dept. SM

A. J. TOWER CO.

A Division of Sawyer-Tower, Inc.
Boston 29, Mass.

(Use Key # V-26 on Inquiry Card on page 37)

hand a several-hundred-million dollar inventory of Navy stores.

Fire Inspector James M. Costello is likely to tell you the record stands largely because he's a comic-type character. He says, "When I tell 'em if they really wanta get me burned up, they should go right ahead and use their waste basket for an ash tray, they may laugh—but they stay told."

The bumptious fire inspector may be mostly right, at that. His "they" are students in the fire prevention classes he and two other inspectors (including the chief inspector) conduct periodically for all employees —20 to 30 at a time. Both Chief Fire Inspector George E. Moore and Fire Chief Gilbert H. Matthews credit the indoctrination sessions, reinforced by constant reiteration and drill, with keeping employees alert to fire hazards and what to do about them.

Add—to the all-employee classes —special indoctrination for personnel in hazardous positions, plus continual preventive maintenance and an unending round of fire inspections—inspections in which all firemen team with the three officially designated inspectors—and Chief Matthews is sure he's got the answer to the Oakland base's record.

"If the hose on a gas tank-truck breaks during a fueling operation, for instance," Chief Matthews says, "our truck jockeys know darned well they've got to call the fire department and block off the area until the spilled gas can be cleaned up."

"And," puts in Chief Inspector Moore for the firemen in general and his three-man crew in particular, "if one of us turns up a fire hazard anywhere on the Center during our constant round-the-clock inspection tours, we find the responsible supervisor and get it corrected on the spot."

Thus, a program stressing prevention—licking fire before it gets started—has paid off handsomely for the Oakland Navy base. The 1955 loss in only 47 fires, as an example, represented a 92 percent decrease from the total for 1954, one of the two worst years in the seven-year span. Total fire losses amounted to $275.25 from 58 fires in 1954 and to $275.67 in 1949.

Even in the worst of the seven years, then, fire loss has been an infinitesimal proportion of the base's plant and inventory value. The highest annual loss figures are actually less than five ten-thousandths of one percent of the $60 million plant valuation alone.

The Center's own 38-man department—charged with maintaining fire safety—is equipped with one 85-foot aerial ladder truck, one 1,250 and two 1,000 GPM triple combination pumpers, and one 2,400 GPM fireboat, plus assorted inhalators and emergency rescue equipment. In applying its ounces of prevention during 1955—thereby keeping its pounds of curative equipment off the streets most of the time—the department instructed 2,949 of the base's 6,000-odd employees in fire safety, conducted 115 fire drills, and made some 55,000 separate fire inspections.

How vital the preventive program has been is underscored by lack—throughout most of the seven years—of a sprinkler system and of adequate fire walls and alarm boxes in 48 of the base's warehouse buildings. Chief Moore points out that only a year ago, the Center finally got an adequate alarm system.

Only now is the Oakland base completing an almost two and one-half million dollar fire wall and automatic sprinkler installation project. But then the Oakland Naval Supply Center finally will have the modern fire-control set-up needed to backstop the fire department's unusual prevention achievements.

LP Gas Fires

(from page 56)

Such fires are impossible to blanket and unless the fire is small, it is difficult to dilute the air sufficiently to starve the fire to extinguishment. Therefore, in case of a large LP Gas fire, if the source of fuel cannot be cut off, the chief concern should be to keep other exposed equipment as cool as possible and prevent the spread of fire. Extinguishers best suited to small LP Gas fires are dry chemical or carbon dioxide and they are best applied at the base of the fire. When the fire is extinguished, the source of fuel should be shut off immediately.

Thirty seconds after being ignited, two tires burn fiercely in fire test.

Extinguisher for Tire Fires

A fire extinguisher with a special chemical may help save truckers millions of dollars a year, according to tests conducted by the Pennsylvania Motor Truck Association.

This is revealed in a manual written by PMTA Director of Safety O. C. Shipley and based on tests made at the Letterkenny Army Ordnance Depot in Chambersburg, Pa.

The manual, "A New Fire Extinguisher For Truck Fires," is published by the PMTA's Council of Safety Supervisors. In it, Shipley says the tests showed that a loaded-stream type of extinguisher was the most effective against tire fires, one of the major truck hazards.

The tests, held last year, consisted of pairs of burning tires. Each set was allowed to burn for about nine minutes—until it was burning intensely inside and out—before applying various extinguishing agents.

The loaded-stream extinguisher proved to be the only one capable of killing the blaze without any danger of a back-flash. Water fog and a dry chemical extinguisher put out the blaze but back-flash occurred within seconds. Carbon tetrachloride failed to extinguish the fire.

Tire fires, Shipley says, are one of the major reasons why the trucking industry is losing millions of dollars annually in valuable cargo and equipment. Losses on the Pennsylvania Turnpike alone, he points out, "have ranged from the loss of an empty trailer valued at $3,250 to a trailer loaded with penicillin reportedly valued at $250,000. Many of these fires have caused losses from $50,000 to $100,000."

Fires resulting from overheated tires that have been run flat or partially flat, or ignited by overheated brakes cause a high percentage of the losses, Shipley explains, adding:

"A burning truck tire is probably the most stubborn fire in the world to extinguish or contain until it can be removed from the vehicle."

As an example, Shipley says that in tests a burning truck tire was removed from a vehicle and completely submerged in water for several minutes, only to back-flash and burn violently when taken from the water.

Then Shipley turns a critical eye at his own industry:

"It is rather obvious that trucking companies will not universally equip each truck with a fire extinguisher capable of controlling a tire fire . . . It is just as obvious that it would be sound business to add this measure of protection to every truck.

"It would appear useless to comment that almost all truck fires are preventable. However, this statement is true.

"To attempt to solve the problem by expecting the driver to remove the hot or burning tire before it destroys the trailer and its cargo is wishful thinking and a completely non-realistic approach. A tire that has been run flat for a long enough period to cause it to burst into flames when it loses the surface cooling present during operation does not allow sufficient time under most conditions for removal before a hot fire results."

The loaded-stream extinguisher, says Shipley, ". . . has great penetrating power. It also serves as a fire retardant solution. The freezing point . . . is 40 degrees below

Here fire is under control. Special extinguisher does not permit flashbacks and is non-toxic. It shoots a stream of 445 to 60 feet, has freezing point of 40° below zero.

zero, making it available for use in extreme winter weather."

The particular extinguisher used is also non-toxic and shoots a stream 45 to 60 feet. It contains an alkali-metal salt solution which was developed by two engineers now in atomic research.*

Independent tests made by state police in several states have corroborated the PMTA's findings. All police cars on the 427-mile section of the New York Thruway, the 118-mile length of the New Jersey Turnpike and the 165-mile section of the Garden State Parkway now are equipped with 2½ gallon loaded-stream extinguishers with the special chemical. They also have been installed and are used by major truck lines, as well as by official county and municipal police units.

The PMTA's test results support the findings of E. C. Iverson, Nebraska State Fire Marshal, several years ago. In his tests, truck tires and tubes were mounted on rims and placed under a platform constructed of 2-inch wooden members to simulate the underside of a truck trailer. The underside of this platform was treated with two coats of fire retardant chemical and one application of a protective undercoating.

Two Tires Used

The tires were placed under this mock truck body to reflect actual wheel and tire mountings as to spacing and clearing. Two tires, dual mounted, were used. They were ignited and allowed to preburn until well involved.

In the first test, a 25-pound dry chemical extinguisher put out the blaze in three minutes. A canvas, treated with fire retardant chemical, was placed over the tires immediately following application of the extinguisher. Yet re-ignition occurred and the heat charred several places in the canvas.

A later model, 20-pound dry chemical extinguisher knocked down the fire in about two minutes. Again, a canvas was used and left over the tires for four minutes. Re-ignition occurred after the canvas was removed.

In the third test, a 2½ gallon loaded-stream extinguisher killed the blaze in 2½ minutes. Re-ignition did not occur. An optical pyrometer recorded a temperature of 2,100 degrees Fahrenheit.

In a fourth test, an asbestos blanket was placed over both tires at about 2,350 degrees Fahrenheit. The blanket was tucked around the tires for 15 minutes. Then a 2½ gallon pump tank was applied to the tires by directing the hose stream under the blanket. But when the asbestos blanket was removed, the base of the tires re-ignited.

* A source for further information about the loaded-stream extinguisher can be obtained on inquiry to the Editor.

Scooploading

(from page 39)

U. S. Metals Refining Company is a copper smelting concern with a large and varied custom business. The Carteret operations call for extensive in-plant transportation involving a large number of "problem" items that must be transferred rapidly while in process and in course of shipment. We try to keep up with the latest materials handling methods, and operate a good-sized fleet of materials handling vehicles dispatched by short-wave radio. At each work center of the plant, the materials handling problems have been analyzed and equipment adapted to the jobs, with our technicians following up on their own ideas for "home-made" improvements. One such center is the railroad loading platform which comes under the direction of John Dickson, Assistant Yard Superintendent, who supervised the hydraulic scoop development.

Our problem item to handle was chunky copper ingot bars, each weighing 55 to 60 pounds and measuring approximately 20" x 4" x 3". The bars are transported by crane in wooden tote boxes—each holding more than 200, or about 13,000 pounds—and are emptied onto the loading platform. A single shipment may consist of up to 1700 ingot bars lying "any which way" in a pile on a steel floor.

Several years ago, when orders were relatively infrequent for this type of ingot, the bars were hand-stacked on a pallet for a standard fork-lift truck. But shipments increased during 1954 and 1955 from less than ten a year to a frequency of about twice a week on the average, and the hand stacking method could not be maintained: too slow, too costly.

Multiple Forks Tried

When the ingot bar business increased, the first fork-lift truck adaptation was to try multiple forks, 5 or 6 of them. The truck rammed into the pile "catch as catch can," moving on to the nearby box car with as many bars as happened to stay on the forks. A helper had to stand by to assist the driver, and to pick up ingot bars that fell to the floor or slid under the truck wheels.

Next, the scoop idea was originated. A 10 cubic foot bucket was purchased so the truck could inch into the pile and lift out a good scoopful. Originally, the bucket had conventional sides extending from the cutting edge. This kind of bucket, we found, frequently caused the truck to be hampered by cross-wise bars which the scoop could not slide under and capture for a lift-out.

Our mechanics welded a "lip" to the bottom of the scoop, extending it 18 inches frontward. This permitted the bucket to slide under the bars, but the added surface of the lip changed the load center adversely. The lip then was cut back to 9 inches, and the sides of the scoop also were cut back to a crescent shape. Stringers were welded to the bottom of the scoop. The measures gave the hydraulic scoop excellent performance characteristics.

Our final step was to find a way of protecting the hydraulic mechanism of the machine from the sudden and severe shocks caused by the motion of the truck as it lifted, lowered and jockeyed a 1000 pound scoopful of shifting ingot bars. In this kind of service, the main hydraulic cylinder of the truck sometimes was bent, in some cases so severely that the pistons

could not be pried out. Such breakdowns are costly in any event, and can cause serious delays on the loading platform as well.

It was at this point that a representative of the manufacturer of the scoop truck suggested trying a hydro-pneumatic bladder type accumulator that had been successfully adapted to provide a load cushion on fork lift trucks and other materials handling vehicles.

The Accumulator Installation

The accumulator is a small steel shell containing a rubber bag which is precharged with an inert gas, usually nitrogen. It is simple to install and the maintenance is slight, consisting of occasionally checking the precharge which is kept at the same level as the hydraulic pressure of the truck circuit.

Our one-pint accumulator is mounted on the fork plate of the truck. It is connected with the main cylinder circuit between the control valve and lift cylinder mechanism. Thus, the pulsations, or shocks transmitted to the hydraulic circuit are absorbed within the accumulator shell by the contraction of the bladder. Incidentally, another desirable effect of the accumulator is to "float" the load. The entire sequence of fork-action and movement of the scoop itself is unusually smooth. What used to be perceptibly sharp bumps are now observed to be a floating motion of the load as the truck lifts, moves and empties.

Pictures by courtesy of Greer Hydraulics, Inc.

Leaves air mint fresh!

Mintol

the multi-purpose industrial disinfectant with the fresh mint leaf aroma

MINTOL disinfectant has a coefficient of 9. Diluted half a cup to the pail of water, it meets the new Use Dilution Confirmatory Test.

Kills bacteria. Mintol sanitizes the surface. Just dilute and apply with mop. Instead of a druggy odor you'll get that refreshingly modern mint fragrance.

Deodorizes. Add one-quarter cup of Mintol to your favorite cleaning solution and apply with mop. You will deodorize as you clean—do both jobs with the same swish of the mop.

★

For free sanitary survey of your premises ask your Dolge service man

For literature about MINTOL and other Dolge products write to The C. B. Dolge Company, Westport, Conn.

operadable DOLGE

(For details, use Key # V-27 on card on page 37)

New Bureau Reveals Accident Records

Million dollar losses currently sustained by employers through industrial and highway accidents, some fraudulent and others avoidable, can be tracked down and largely eliminated through research and careful statistical study of pre-employment histories of job applicants.

This is the promise held out by the Accident Index Bureau, Inc., with headquarters in Newark, N. J. Branch offices of the newly-formed statistical research organization will be set up as required in Jersey City, New York City, Boston and other areas.

Provides Special Service

The Bureau provides a service not heretofore available to personnel managers of large industries and direct employers of smaller firms by providing, on a co-operative basis, complete and factual accident records of men and women being considered for employment. Both industrial and highway accidents are included in the service.

In addition to increased efficiency and drastic reduction in production costs, industry also will reap great benefits through potential reduction of public liability and Workmen's Compensation insurance rates, according to Henry M. Grosman, General Counsel of the Accident Index Bureau.

Mr. Grosman, trial attorney for several insurance companies and Chairman of the Workmen's Compensation Committee, New Jersey Bar Association, has been actively engaged in insurance claims and legal activities for approximately 30 years. He is legal editor of "What's the Law?" appearing as a monthly feature of Safety Maintenance.

E. L. R. Stewart, President of the Accident Index Bureau, Inc., is chief executive of the New Jersey Claim Service Bureau, specialists in Workmen's Compensation claims. Other officers are Loftus Hengeveld, Vice President; veteran insurance executive who is President of National Adjusters, Inc., and Alfred R. Marsh, C. P. A.

Catch Accident Habits Early

"The time to check 'accident habits' of workers is before they are hired and not afterwards," Grosman emphasizes. "All employers realize that the right man for the right job is basic in industry today. That's why the man, or woman, who has a record of too many accidents in previous jobs—or even when away from work—

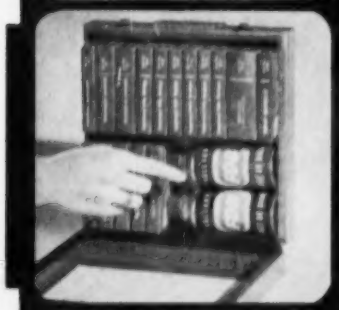
(Continued on page 64)

FOB

EMERGENCY TREATMENT FOR BURNS

FIRST ON BURNS

A touch of the button on top of the F.O.B. container brings instant relief to painful burns from sun, fire, electricity or scalds. F.O.B. aids healing and protects against infection. It is non-toxic, non-irritating, and can be safely sprayed on any part of the body.



BURN KITS

For treatment of chemical and heat burns. Available in 3, 5 and 11 oz. spray containers. Write for laboratory test reports on F.O.B. with specifications for new Burn Kits.

E. D. BULLARD COMPANY, San Francisco, California

BULLARD

(Use Key # V-12 on Inquiry Card on page 371)

inside the trade

J. B. Davies

G. M. Glidden

THE INDUSTRIAL SAFETY EQUIPMENT ASSOCIATION, INC., held its Annual Meeting at The Greenbrier, White Sulphur Springs, West Virginia, and re-elected as President *J. B. Davies*, of Mine Safety Appliances Co. Elected also at the meeting were *G. M. Glidden*, Acme Protection Equipment Co., Vice-President; *W. W. Fallon*, The Pac-Kit Company, and *A. F. Parmelee*, United States Safety Service Co., Trustees.

Fred Guilbert, Chicago Eye Shield Company, and *Howard M. Weiss*, Pulmosan Safety Equipment Corp., carry over as members of the Board, while *S. C. Herbine*, Willson Products Division, Ray-O-Vac Company, Junior Past President, continues as a member of the Board for another year. In addition, Mr. Herbine has served on the Board of Directors of the National Safety Council. In this capacity he serves as liaison between the I.S.E.A. and the Council.

The I.S.E.A. is composed of a group of manufacturers whose express purpose is to exchange ideas which ultimately benefit users of industrial safety equipment, in addition to solving problems of common interest of the industry.

The Association is divided into Product Groups representing all types of industrial safety equipment.

THE CAMBRIDGE WIRE CLOTH COMPANY has announced the appointment of Smith-Monroe Company, South Bend, Indiana, and The Harry I. Sanctuary Company, Poughkeepsie, New York, as Selective Distributors for its line of Gripper Wire Slings.

Other new selective distributors are Hamerslag Equipment Company, South San Francisco, California, and Materials Handling Equipment Co., Inc. of Indianapolis, Indiana.

MIRKEM, INC. has appointed *James V. Cawley*, formerly editor of Modern Sanitation Magazine, as staff sanitation consultant. Mr. Cawley's responsibilities will embrace the application of research and products to the environmental sanitation field, particularly industrial plants and institutions. He will also coordinate dissemination of data of interest to public health officials.

Charles M. Cassidy has announced the formation of a new company, *CASSIDY PRODUCTS, INC.*, for the manufacture of all types and sizes of floor maintenance machines and vacuum cleaners. Mr. Cassidy, who will serve as President of the concern, has had 17 years experience in designing and producing maintenance machines, until recently serving as chief engineer, designer, and company secretary for Multi-Clean Products, Inc. The new company will be offering its products under its own label to the sanitary supply industry. The address of the firm is 1837 University Ave., St. Paul 4, Minn.

John R. Jones

John R. Jones has been appointed sales manager of *THE PIONEER RUBBER CO.* according to an announcement by *J. H. Gibson*, president of the company. Mr. Jones was formerly field sales manager of the Sundries Division, B. F. Goodrich Co., Akron, Ohio, where he had 27 years of service.

One of the first companies in America to mold rubber products celebrates its 100th anniversary this year. It is the *TYER RUBBER COMPANY* of An-

dover, Massachusetts, which is still doing business in the town where it was founded in 1856.

Originally established to make a patented overshoe, Tyer Rubber Company has grown through the years and now manufactures rubber and canvas footwear, rubber covered rolls and a wide variety of molded rubber products. Its operations include all phases of rubber research, development and manufacture.

MACWHYTE COMPANY has named *Mr. Francis D. Holden* Vice President in Charge of Sales. Formerly Sales Manager, Mr. Holden has had more than 20 years' experience in Macwhyte Company General Sales and Export Division.

A. C. Trautwein

John Lohrey

THE FYR-FYTER CO. has announced the creation of two new divisions and the appointment of two top organization men to head them. President Don O. Wood said formation of the Fyr-Fyter Division and the Accessories Division was dictated by increasing sales and broadening of the company's product line.

A. C. Trautwein was elected to head both divisions as vice president and general manager. He will be assisted in the Accessories Division by *John Lohrey*, who was named assistant vice president and manager.

The Fyr-Fyter Division will cover sales of portable fire extinguishers, wheeled engines and other fixed fire control equipment. The Accessories Division will furnish a full line of nozzles, couplings, hose, fire hose, extinguisher cabinets and other related fire department equipment.

Mr. George E. Semple, 61, President of *PROTECTIVE EQUIPMENT, INC.*, Chicago, Illinois, passed away on April 19th at St. Francis Hospital in Evanston, Illinois. Mr. Semple was active in industrial safety for some 30 years. Formerly a representative for *Willson Products, Inc.*, Mr. Semple founded an exclusive safety type of distribution in 1934 by setting up Protective Equipment, Inc., along with Mr. J. Roy Abell. For the past 27 years he has devoted all of his energies to the advancement of industrial safety and has contributed much.

Mr. Semple was a member of the Hard Shell Turtles Club, Veterans of Safety, Industrial Safety Equipment Manufacturers Association, and Chicago Railway Club.

George A. Doerffel, for many years connected with the industrial safety equipment business, has become a partner in the Robotham Advertising Agency of Boston, Mass. Mr. Doerffel has many friends in the safety field and has an extensive background in the promotion of accident prevention equipment. He was formerly a vice president of the Industrial Products Co. of Philadelphia and more recently has been promoting electronic equipment for fire protection and the flame-failure safeguarding of boilers. In his new connection Mr. Doerffel will be using his wide experience in working with strictly industrial concerns.

Appointment of *P. DUDLEY KALEY* as manager of sales for *PITTSBURGH PLATE GLASS COMPANY'S Fiber Glass Division* has been announced by Robert A. McLaughlin, general manager, Fiber Glass Division.

Mr. Kaley formerly had served as manager of the Fiber Glass Textile Sales in New York City. Associated with Pittsburgh Plate since 1952, Mr. Kaley will transfer to the company's general office in Pittsburgh in his new position.

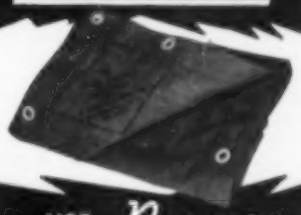
BUFFALO FIRE APPLIANCE CORP. has announced the appointment of *Richard S. Whittier* as New England and New York State District Sales Manager. *Byron J. O'Hara*, vice president and general sales manager, said Whittier will maintain offices in Northampton, Mass.

Henry H. Flatek has been appointed advertising manager of *THE CLEVELAND WORM & GEAR COMPANY* and its affiliate, *THE FARVAL CORPORATION*. He joined the sales department in 1945 and served subsequently as assistant sales supervisor and assistant advertising manager.

Safety Appointments

The formation of a new Industrial Division within the structure of the Seattle-King County Safety Council has been announced by *W. J. Billings*, President of the Council. *Mr. T. J. Trethewway*, formerly Director of Safety for the 13th Coast Guard District, has been employed by the Safety Council as consult-

CONFINE YOUR DANGER!



USE Reeves FIRE CHIEF TREATED WELDING CURTAINS

- Close woven canvas
- weighs 10 ounces per square yard before treatment
- impregnated with Hooper's Fire Chief treatment under their patent
- Underwriters Laboratory approved

The perfect protective curtain for all your dangerous work.

A. SMITH & SON, INC.
"IF IT'S MADE OF CANVAS, WE MAKE IT"
Green & Ridge Ave. Philadelphia 23, Pa.

(Use Key # V-28 on Inquiry Card on page 37)

★ THE POSITIVE LADDER SAFETY DEVICE

It locks automatically—instantly—holds.

SAFETY DEVICE FOR LADDERS

Prevents death and injuries from falling.

Automatic: Positive. Will catch workman if he starts to fall even if unconscious.

Inexpensive. Easy to install. No upkeep. Clamps to any rung ladders, peg ladders, pole or frame. No welding or cutting.

Simple to operate: Requires no attention from climber.

Notched rail **hot dipped galvanized.** Entire equipment rust and corrosion proof.

In use throughout country and abroad for approx. 8 years.

Patented. Manufactured only by

SAFETY TOWER LADDER CO.
1024 Burbank Blvd. P.O. Box 1052
BURBANK, CALIFORNIA

★ ★ ★ ★ ★

(Use Key # V-29 on Inquiry Card on page 37)

ing engineer and executive manager of the division. *Mr. Pat Retten,* General Safety Supervisor for Simpson Timber Co., is chairman of the Division.

"We have long felt," said Mr. Billings, "that a safety engineering service should be available to smaller industries in Seattle and King County. Many cannot afford to employ a full-time safety engineer. Our program will provide a direct consulting service without adding to their payrolls.

Mr. Tretheway will make regular visits to each subscribing plant, investigate accidents promptly, design safe equipment at the plant's request and indoctrinate employees. The service will also include an award program, posters and literature, and regular publications for both employees and key personnel.

Firms interested in the consulting service are invited to contact Mr. T. J. Tretheway, Seattle-King County Safety Council, 104 Chamber of Commerce Building, Seattle.

Anton A. Fridrych, assistant chief of the Riverside Volunteer Fire Department, has been appointed safety engineer for the Des Plaines facilities of *Universal Oil Products Company.*

Mr. Fridrych joined Universal in January, 1934, as a laboratory technician and became an assistant supervisor in the company's analytical and control laboratory. For the past year he also served as an aide to the late William F. Brown, for many years UOP's safety engineer.

J. D. Holtzapple has been appointed director of safety for Blaw-Knox Company, Pittsburgh, it was announced by *Howard M. Winterson,* director of industrial relations for the company. Mr. Holtzapple was director of training and safety for the Continental Foundry & Machine Company, purchased by Blaw-Knox in 1955.

Mr. Holtzapple is second vice-chairman of the Metals Section of the National Safety Council and a member of the Safety Committee of the American Foundrymen's Society.

AMERICAN STANDARDS ASSOCIATION has announced that *W. T. Rogers* has been appointed representative of the Electric Light and Power Group on the ASA Safety Standards Board. Mr. Rogers is director of the Safety Department of Ebasco Services Incorporated. He joined Ebasco in 1936 and has been active in safety work for the electric industry since that time.

AVOID INJURY
Use
A TAMCO
SleeFF™
SAFER • SURER • SMARTER
Bruised or broken fingers mean lost man hours and costly work stoppage. ELIMINATE THESE INJURIES by using a TAMCO safety SLEEFF Hand Guard on all hand tool operations.
Durable lightweight plastic. Available in octagon sizes: ½", ⅝", ¾", ⅞" and 1".
Assure positive protection from hammer blows . . . TODAY! See your local supply house or write direct for Leaflet SL-56.
Dealer Inquiries Welcomed
TAMCO, INC.
PITTSBURGH 34, PENNSYLVANIA

(For details, use Key # V-30 on card on page 37)

Accident Records

(from page 61)

is a threat to plant efficiency, production costs and working-level morale, as well as to himself and fellow workers."

The accepted practice today, according to the Accident Index Bureau, is for personnel departments to depend almost entirely on accident information supplied by applicants for work. In most cases these reports are reliable but, the "minority reports" that cover up past accidents represent economic hazards that industry cannot afford to overlook in these cost-conscious days.

Grosman lists these hazards as follows:—

1.—Physical disabilities not reported by applicants and difficult to detect in routine medical examinations. These would include diabetes, epileptic seizures, blood pressure abnormalities, spinal disorders, heart conditions, Paget's disease, neuroses, etc.

2.—The professional fraudulent claim-maker. Even though actual court cases have indicated palpable fraud in hundreds of cases, according to the Accident Index Bureau, final decisions too often favor the dishonest worker to the financial detriment of the employer. Complete case histories of accidents and claims, would eliminate this vicious element from industry.

Inaccurate Information

"Individuals represented in the two 'danger zones' can be expected to file inaccurate, if not completely false, information when applying for work, and, unfortunately, there has not been any central clearing house where false claims can be detected **before a man** is hired."

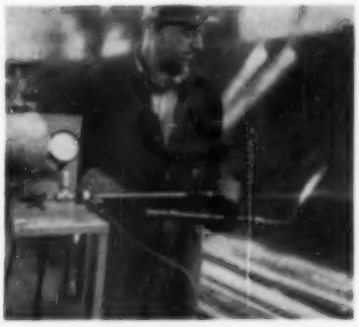
The Accident Index Bureau will provide this service to subscribers who pay fees in direct relation to the number of employees on their payrolls.

The Accident Index Bureau statistics are obtained from official records of State Departments of Labor and Industry, insurance companies, motor vehicle agencies, and court files. All Bureau records are confidential and subscribers will be required to keep all information submitted confidential and within their organizations.

Material appearing in this section is published as information and is not intended to imply endorsement or guarantee by SAFETY MAINTENANCE.

To obtain descriptive literature of products listed, use Reader's Inquiry Card. Write in code number given each item. Send written requests to: Service Dept., SAFETY MAINTENANCE.

what's new for SEPTEMBER



FIRE RESISTANT HYDRAULIC FLUID

(Use Key # 914 on Inquiry Card on page 37)

AN HYDRAULIC fluid whose fire-resistant properties prevent it from burning on contact with flames, heated metal surfaces, or molten metal, has been introduced by the Shell Oil Company, under the trade name Irus Fluid 902. A special formulation of water, petroleum hydraulic oil and emulsifying agents, the fluid is particularly suitable for use in industries where hydraulic leaks or line ruptures would be immediate fire or explosion hazards.

The new fluid is said to eliminate the possibility of combustion by releasing its water content as a protective steam blanket to quench fire. This "snuffer" action reduces local temperatures and displaces oxygen from the immediate area. In most cases, the remainder of the hydraulic fluid will not support its own combustion. Further, the oil is said to continue hydraulic action should the water be dissipated for any reason.

Preparation of existing systems prior to installation of the fluid requires only a thorough cleaning to remove previous materials. It is non-corrosive on ferrous and most non-ferrous metals. The fluid is colored a bright yellow to permit instant recognition and location of possible leaks.

DIAMOND-SHAPED AISLE MARKERS

(Use Key # 915 on Inquiry Card on page 37)

DIAMOND-shaped aisle markers, said to last many times longer than painted lines or aisle marking tape, have been introduced by the Lester Brossard Company. Made of vinyl plastic, the markers, known as Klear-Vu, are resilient, abrasion-resistant, and will not crack or break under the heaviest traffic conditions.

The markers are easy to install. Their self-adhering backing requires only a light coat of adhesive applied to the flooring for smooth, non-shifting installation. The plastic markers are not affected by oil, grease, grime, salts, water or temperature changes. Available in three high-visibility colors, (yellow, white, and red), and two sizes, (5½" x 2⅜" and 8" x 3½").

ORBITAL SHAPE CLIP-ONS

(Use Key # 916 on Inquiry Card on page 37)

TUC-OVER, the safety clip-on manufactured by the Watchemoket Optical Co., Inc., is now available with orbital shape lenses and frame to fit the popular new shape prescription glasses. Made in two sizes to fit all orbital shape prescription glasses frames, they have optically perfect, shatterproof methacrylate Eye Savers lenses, .080" thick, and a tough, resilient, lightweight attractive polyethylene frame.

Tuc-Overs easily snap on or off prescription frames, and are held firmly in place by plastic clips which do not scratch the frame or lenses. A protective visor extends back to the forehead for over-eyes protection against dust, glare and flying particles. Interchangeable, Eye Savers lenses can be replaced or changed by the wearer without special tools and are available in light or medium green.

INDUSTRIAL AMBULANCE

(Use Key # 917 on Inquiry Card on page 37)

THIS electric-powered ambulance (or litter car) is the latest addition to the line of Westcoaster Industrial Cars manufactured by West Coast Machinery, Inc. The unit provides room for a driver, attendant (or nurse) and the patient. In addition, there is ample space for stretcher, oxygen equipment, medical bag, etc.

Designed for use both inside and outside of plant or institution, its three-wheel design and consequent sharp turning radius permits access to narrow corridors. Cushioned tires, extra coil springing, and two shock absorbers insure a comfortable ride. Torsion bar suspension provides the car with extra ground-hugging stability. Power is transferred through an automotive-type differential drive. The Westcoaster Ambulance is powered by 6 heavy-duty batteries; a built-in recharger quickly builds power back up to peak working capacity.

FLOOR MACHINE STAIRS RAMP

(Use Key # 918 on Inquiry Card on page 37)

WITH a view to preventing the large number of accidents to custodians who attempt to transport heavy floor maintenance machines up and down stairs, the Safety Ramp Company has developed a strong, lightweight aluminum stairs ramp. Designated the "Safety Ramp" it is said to safely allow any standard-sized machine up to 21 inches in diameter to be pulled up or down the incline.

In use, the portable ramp may be temporarily laid over a flight of stairs, and later picked up to be used on the next staircase, or packed away for future use. The ramp, available in two 8 foot sections, contains a series of safety catches built into it at regular six inch intervals. According to the manufacturer, the catches will safely hold the machine at any point on the ramp, unaided by the custodian.

MANUAL FIRE ALARM SYSTEM

(Use Key # 919 on Inquiry Card on page 37)

AN APPROVED manual fire alarm system, Type SSA, designed for the particular needs of offices, factories, and other large buildings, has been announced by the Edwards Company, Inc. The system indicates the location of the fire, and effects immediate evacuation of employees. It is designed to permit simple testing and scheduled fire drills.

Manual alarm stations are operated by a positive, single action, assuring immediate transmission of alarm. Alarm signals may be single stroke bells, chimes, or horns. The alarm stations are attractively designed and typical warning devices used with the system include 4", 6" or 10" bells and modern flush-mounted or grille-type horns. Warning devices and alarm stations are wired through a closed-circuit to a supervisory control panel that is energized from a 115/230 volt, 60 cycle, three-wire AC source. The control panel consists of supervisory relays, fuses, a milliammeter and terminals for alarm station and warning device circuits. A trouble bell is provided for operation when circuits are accidentally opened or grounded. The fire alarm system is Underwriters' listed.

PORTABLE RESUSCITATOR

(Use Key # 920 on Inquiry Card on page 37)

A NEW and improved portable oxygen and resuscitation unit has been announced by the Ohio Chemical & Surgical Equipment Co., Division of Air Reduction Company, Inc. Safe, compact, and lightweight, the unit can be used in medical offices, ambulances, industrial plants, etc., for resuscitating people who have stopped

breathing or for supplementing voluntary breathing. In addition, there are many other practical applications of this unit by fire and police departments, rescue squads, and civil defense units.

Positive pressure resuscitation can be administered by squeezing the bag, and a relief port protects the patient from excessive pressures. A safety valve limits the pressure to 20 mm Hg. Oxygen flow is controlled with a needle valve. Packed in a green leatherette case with detailed instructions permanently affixed to the cover, the unit is 5½ x 10 x 23½ inches. The unit weighs 21 pounds, including a standard "D" size cylinder.

PORTABLE POWER SAW

(Use Key # 921 on Inquiry Card on page 37)

SAW-MOR, a reciprocating saw attachment for electric, air drills and flexible shafts, has recently been improved in mechanical design by the manufacturer, Saw-Mor Tool & Blade Co. A completely new blade-holder replaces the previous holder,

and is said to grip the saw-blade securely, holding it firmly in position against the chuck-plate with 2 cone-tipped set screws. Removal of the blade is expedited by a simple turn of standard Allen Socket Set Screws. The entire wobble-shaft mechanism has been redesigned with improved balance, insuring a full ⅞" stroke with vibration reduced to a minimum. The wobble-shaft is the mechanism that converts the rotary action of the drill to a reciprocating motion.

The entire weight of the new Saw-Mor is 3½ lbs., permitting easy portability. It is said to speed up sawing of all metals, stainless or monel, as well as wood, plastics, cable, composition, etc., and is recommended for metal-working industries, body and fender work, electrical and building contractors, maintenance men, wrecking crews, etc. One of its advantages, according to the manufacturer, is the safety factor it provides for cutting operations in the petroleum industry, powder plants and other areas where flame-cutting tools create a definite fire-hazard. It is also useful for quick rescue of trapped persons without added hazard of fire and burns caused by flame-cutting equipment. A complete line of Saw-Mor blades with special teeth arrangements is available for cutting every type of material.

DRUM CRADLE TRUCK

(Use Key # 922 on Inquiry Card on page 37)

A RETRACTING caster frame gives the Morse Drum Cradle Truck No. 55-0 a long, wide and safe wheel base, according to the manufacturer, Morse Mfg. Co., Inc. The frame swings inside the rockers while the drum is being rocked up and loaded. It is then thrown forward by pressure on the foot lever, placing the casters well in front of the truck. A safety catch is located on the nose piece to prevent the drum from slipping while being loaded. The truck has a side opening for drums which must be dispensed into a horizontal position from the side.

The drum cradle truck has four large 3" diameter wheels supported by strong cross braces to provide easy rolling of the loaded truck into dispensing position. Four 2½" rollers mounted on top rails easily position the bungs of 55 and 110 gal. drums. Finished in red enamel, it is also available with a shorter wheel base to accommodate 30 gal. drums.

STAIN & RUST REMOVER

(Use Key # 923 on Inquiry Card on page 37)

HUNTINGTON Laboratories, Inc., has announced a new cleaning powder, Huntington Stain-Rust Remover. This stain and rust remover is simply sprinkled onto a damp cloth and lightly rubbed on the discolored surface. It will dissolve and remove stubborn rust streaks and metal tarnish, ink and fruit stains, grease and oil, from a wide variety of hard surfaces.

The cleaner is recommended for cleaning ceramic tile, porcelain, machinery, electrical equipment, chrome plating, marble and concrete floors, etc. It restores the original finish, without a tendency to scratch the surface. In effect, it is itself a polishing agent, the company claims. Convenient and easy to use, it is available in 12 ounce shaker top cans.

TRUCK BACK-UP ALARM

(Use Key # 924 on Inquiry Card on page 37)

THE manufacture of a completely automatic, mechanical safety back-up-alarm for trucks has been announced by E. D. Bullard Company. The alarm is operated entirely by gravity, and requires no wires or switches. Back-up-alarms have been required on defense construction projects in Alaska and the northwestern part of the United States under the jurisdiction of the Court of Engineers since 1951 as a means of reducing accidents caused by heavy equipment backing through construction areas. Proper use of back-up-alarms can reduce by 90% the number of this type of accident, according to the manufacturer.

The alarm is a self contained unit, easily attached directly to the rear wheels of all dual-wheeled vehicles will full floating axles. It rests directly upon the heads of the bolts which hold the axle in place. Mounted on the outside on left and right rear wheels the alarm rings loud and clear, warning anyone behind the truck of approaching danger. The alarm is a six inch metal bell mounted on a steel plate and is installed on the axle hub of vehicle wheels. It is sounded once every quarter revolution when the wheel is in reverse motion. When the vehicle is moving forward there is no sound as the hammers fall against rubber stops and remain in that position, held by centrifugal force. Mounting is accomplished by the use of two cap screws passing through the rear mounting plate and fastening into the threaded holes normally present in all full floating axle flanges. When mounted, the recessed construction of the wheels provides ample protection for the alarm.

SAFETY EQUIPMENT SANITIZER

(Use Key # 925 on Inquiry Card on page 37)

PULMOSAN Safety Equipment Company has announced a new cleaner, known as Sanitizer, for the removal of grease, grime and dust from rubber, metal, glass, etc. The liquid not only cleans equipment, but also deodorizes and sanitizes it.

A neutral cleaner, it rinses free in the hardest of waters. According to the company, the cleaner is especially effective in the maintenance of respirators, goggles and masks. Available in 1¼ ounce or quart size, and packaged in unbreakable plastic containers.

COAL WET DUST APPLICATOR

(Use Key # 926 on Inquiry Card on page 37)

A NEW development of Mine Safety Appliances Company permits rock dusting up to the working face, during shifts, without interference to normal coal production. The M-S-A Wetdust Nozzle, used in combination with the Bantam "400" duster, combines the rock dust with water, for application in slurry form. The slurry is applied to roof and ribs by the Bantam "400" rock dust distributor equipped with a special nozzle which mixes water with the dust. The mixture is not used on the floor, since it would create a slippery condition. Usually, dry dust is spread to cover the floor. This same slurry is an excellent fire fighting medium. Incipient fires which may occur in the working place can be easily extinguished through use of this slurry. The workmen are familiar with the equipment as it is used in dusting operations and is constantly at hand in the immediate vicinity.

The Wetdust Nozzle can be attached to the standard discharge hose of the Bantam "400" by means of a hose clamp. A water line with a minimum flow of 10 gallons per minute and pressure of 50 pounds per square inch is attached to the nozzle. As the dry dust and air enter the nozzle from the rock dust hose, a fine spray of water is directed into the mixture, thoroughly wetting the dust before it leaves the tip of the nozzle.

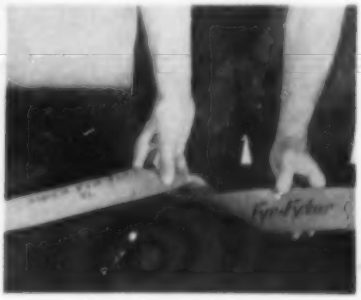
Three tip sizes are available, 1", 1¼", and 1½". All tip sizes are completely interchangeable with the standard water body.

LIGHTWEIGHT FIRE HOSE

(Use Key # 927 on Inquiry Card on page 37)

A NEW 1½ inch fire hose weighing 34½ pounds in a coupled 100-foot length has been developed by Fyr-Fyter Company. Called Super Fyr-Flex XL, the double jacket dacron hose is quicker drying because it absorbs 25 percent less water. In addition to the conventional 50-foot lengths, the hose is available to municipal and industrial fire departments in 100-foot sizes.

Super Fyr-Flex XL hose can be quickly swung into action, because of its light weight. The danger of couplings pulling off or becoming snagged at the scene of a fire is cut in half by using the 100-foot length. The hose has a much smoother waterway and the weave's close picks per inch reduce friction loss to a minimum. The hose also requires less time and space to pack and fold. Its lightweight is due to the use of extra-long staple cotton chemically treated to retain flexibility and provide added strength. The cotton, which supports the dacron filler cords, yields at least 10 percent more strength.



STATIC-CONDUCTIVE SHOES

(Use Key # 928 on Inquiry Card on page 37)

A NEW type of static-conductive shoe that discharges static electricity as rapidly as it is generated has been successfully tested under explosion-hazard conditions, reports the Bates Shoe Company. These shoes, modeled after Bates' line of slip-on shoes, have conductive vinyl soles that resist wear, are chemically resistant, and maintain conductivity at a high level longer than any other conductive soling material. Soles meet National Fire Prevention Association and Underwriters Laboratories codes for conductive footwear.

The shoes were tested under actual working conditions in static-explosion areas in a wide variety of industries, including sensitive areas in hospital operating rooms. They were found not only to discharge all static electricity, but to remain flexible and to maintain their shape after long months of heavy use.

EMERGENCY VEHICLE TRAFFIC CONTROL DEVICE

(Use Key # 929 on Inquiry Card on page 37)

EL-TEC, manufactured by Standard Coil Products Co., Inc., allows an emergency vehicle to automatically turn all traffic signals red along its route while speeding through congested streets. This traffic control device, which can be mounted in ambulances, police cars, fire engines and Civil Defense vehicles, activates traffic lights three to four blocks in advance, turning them red in all four directions after a rapid flashing signal by the yellow caution light. In the event that two emergency vehicles approach the same corner from different directions, a rotating red beacon on the top of the traffic control box lights up and warns both drivers they are about to meet.

Two types of basic equipment are used: transmitters and receivers. The transmitter, mounted in the emergency vehicle, broadcasts a dual radio tone which is beamed to the receivers. One receiver is located at each intersection controlled by traffic lights. Emergency vehicle accidents are more frequently fatal and much more costly than ordinary car accidents for these reasons: high speeds increase hazards; under present traffic conditions, emergency vehicles often fail to gain uncontested right-of-way, particularly at intersections controlled by traffic lights; and existing warning devices are frequently not seen, heard nor heeded.

El-Tec has received a "type approval" by the Federal Communications Commission, approvals by the National Safety Council, The International Fire Chiefs' Association, and the International Police Chiefs' Association.

AIRLESS PAINTSPRAY UNIT

(Use Key # 930 on Inquiry Card on page 37)

ACCORDING to the manufacturer, Bede Products, Inc., portable airless spray coating units now make it possible to bring the spraying operation to the work. With this equipment it is possible to finish such items as large machine tool equipment, structural shapes, earth moving equipment, and others, without the necessity of moving these cumbersome items to a central finishing area.

The Airless Spray Coating process utilizes no atomizing air at the spray gun, therefore, minimizing the overspray problem. By applying hydraulic pressures, 400 to 600 pounds per square inch, to heated finishing materials, complete atomization of the finishing material is achieved. The company claims the advantages of this process are numerous: considerable paint savings are made possible (said to be as high as 40-50 percent); airless spray painting can be conducted where it has previously been necessary to brush paint the product; by heating the finishing material higher solids finishes can be applied, more material is applied in fewer passes, and a better appearing finish is achieved; health hazard to the operator and others is reduced, accomplished by minimized overspray; reduced air-makeup requirements.

WATERLESS HAND CLEANER

(Use Key # 931 on Inquiry Card on page 37)

A NEW waterless cream hand cleaner has been developed by the American Detergent Company, Inc. Difficult stains such as tar, iodine, marking and printing inks, dyes, mastics, grit, paint, etc., are said to be removed quickly and efficiently from the skin.

Known as Mighty Kleen, the cleaner incorporates special conditioning lubricating oils and lanolin, as well as hexachlorophene, a healant and antiseptic. It has a pH factor of 8.4 which represents the neutrality of the better body soaps and skin lotions. The cleaner is non-toxic and non-irritating, and is available in sturdy, 12 or 32 ounce-size dispensers, as well as 1 and 5 gallon spout cans, and 15, 30 and 55 gallon drums.

SOLVENT VAPOR DEGREASER

(Use Key # 932 on Inquiry Card on page 37)

A new solvent vapor degreaser has been developed by TECT, INC. Designated Model 22, this versatile unit can be operated with either vythene, trichlorethylene, or perchlorethylene, requiring only minor adjustments of the thermostatic controls. The main body of the degreaser is constructed of galvanized steel with an outside coating of black Epodax solvent-im-

pervious resin to reduce heat loss. A stainless steel coil is mounted as a condenser inside the chamber, and additional safety is provided by two thermostatic controls.

The lower thermostat prevents breakdown of the chlorinated solvent due to thermal decomposition and shuts off the machine when it requires draining. This thermostat also prevents burnout of the electric, immersion-type heating elements if the level of the solvent should fall too low. The upper thermostat is mounted above the stainless steel condensing coil as a safety device to prevent the solvent vapors from going out into the room in the event that the water supply fails. A red neon light shows when the machine is on. The Model 22 requires approximately 13 gallons of solvent for operation and has a production capacity of approximately 350 lbs. of metal per hour. A wire mesh and expanded metal basket, 18" in diameter and a work rest, both galvanized, are also provided.

COMBINATION LADDER-CART

(Use Key # 933 on Inquiry Card on page 37)

ROL-AWAY's latest "Stock Picker" model is designed for handling packaged goods or small parts in narrow aisles and cramped quarters. Measuring only 41 by 20 inches, it enters and turns in the smallest of spaces. When operated in small space its space saving, safety ladder can be folded up close to the truck. Ladder operates by a lock lever which automatically folds the ladder when not in use.

Another important feature of the new model, manufactured by the Rol-Away Truck Mfg. Co., Inc. is its safety factors. The ladder which has four rubber-tipped feet is so designed that when the operator steps on it, it spreads automatically. With the lock lever down, the rear casters of the truck are lifted off the floor making it safe to walk on the top shelf for stock work inventory. Ladder has three wide, abrasive-covered steps, making it easy to climb. The new model is especially popular with women, who like its safety features and find its all-aluminum construction and free rolling casters makes for easier handling.

EXPLOSION-PROOF HAND LAMP

(Use Key # 934 on Inquiry Card on page 37)

AN explosion-proof electric hand lantern (287EX), approved by Underwriters' Laboratories for Class 1, Group D hazardous locations, has been added to the Big Beam line by U-C Lite Manufacturing Co. Designated the Model 287EX, it features a sparkproof case and spring bulb ejection. The container and head are of drawn brass and finished in red baked enamel. The handle is die cast zinc. Wires from the container to the head are sheathed in flexible brass tubing. Lead seals on container latch and rim screw prevent tampering by unauthorized persons. The container latch can be padlocked.

The lantern bulb is held in its socket by a compressed high-tension spring clamped over the glass envelope of the bulb. When the bulb cracks or breaks, the spring crushes the bulb and simultaneously ejects bulb-base from contact socket, thus eliminating filament afterglow. The lamp is operated by a push-action switch. Battery connectors are pressure type. The Model 287EX holds two standard 6-volt lantern batteries and operates on one or both.

TINY FIRE ALARM

(Use Key # 935 on Inquiry Card on page 37)

A SMALL, compact fire alarm that is installed by plugging into any standard AC outlet shrieks an ear-splitting alarm at the first sign of fire or ominous overheating. Intended for plants, offices, stores,

warehouses and homes, it can be easily installed wherever fire may gain costly headway before being detected. The unit, known as Fire-Spy, has been made available by the Laramie Chemical Corp.

The portable, reusable alarm draws no current except when signaling and is recommended by the manufacturers as a companion system to sprinkler and other standard fire detection and fire fighting systems. To insure adequate time for fight or flight, its sensitive thermostat triggers the alarm when heat reaches 140 degrees, and continues it until conditions return to normal (about 100 degrees.) It can be tested from time to time by holding a lighted cigarette or match to the circular thermostat button on its face.

HEAD MOUNTED MAGNIFIER

(Use Key # 936 on Inquiry Card on page 37)

A NEW model Headloupe that can be easily moved in or out of position and that can be worn equally well over personal glasses has been announced by the Safety Division of The Boyer Campbell Company. It is identified to the trade as No. 502. The mounting permits the lens holder to be moved in or out, up or down, projecting the object as you want to see it. It may be positioned to the ease and comfort of the wearer, leaving both hands free for work.

It is made in two powers: 1¾ diopters, 13" focal range; 2½ diopters, 9" focal range. Headloupe #502 is adaptable to all kinds of close precision work such as in tool and die making, small parts assembly, inspection laboratories, first aid and hospitals, etc.

YOUR FREE INQUIRY CARD—Page 37

Index to Advertisers and their Agencies

American Optical Co.	Inside Front Cover	Sutherland-Abbott Agency, Boston
Audivox, Inc.	42	John C. Dowd, Inc., Boston
Ballymore Co.	53	Eldridge Co., Philadelphia
Bausch & Lomb Optical Co.	12	Ed Wolff & Associates, Rochester
Bullard Co., E. D.	62	Wenk-Lougee-McDonald & Lee, San Francisco
Cover, H. S.	41	Jerry Bryant Advertising, Chicago
Davis Emergency Equipment Co., Inc.	56	Williams and London, Newark
Dolge Co., The C. B.	61	Malone, Moore Associates, Inc., New York
Edmont Mfg. Co.	8	Maurice Mullay, Inc., Columbus
Granet Corp., The	50	Meissner & Company, Inc., Boston
Hild Floor Machine Co.	6	Henri, Hurst & McDonald, Inc., Chicago
Hood Rubber Co.	47	Henry A. Loudon Advertising, Inc., Boston
Hynson, Westcott & Dunning, Inc.	Back Cover	
Junkin Safety Appliance Co.	40	Farson, Huff & Northlich, Louisville
Legge Co., Inc., Walter G.	10	J. M. Kesslinger & Associates, Newark
Littell Machine Co., F. J.	46	Vernon S. Weiler, Chicago
Martindale Electric Co.	58	Kenneth H. Kolpien Advertising, Cleveland
Multi-Clean Products, Inc.	11	Alfred Colle Company, Minneapolis
Pittsburgh Plate Glass Co.	17	Meson, Inc., Detroit
Rose Mfg. Co.	51	Baccard, Dunshee & Jacobsen, Inc., Denver
Safety Tower Ladder Co.	63	Walter DuBree Advertising Agency, Los Angeles
Shell Oil Co.	2 and 3	J. Walter Thompson Co., New York
Silicone Paper Co. of America, The	1	Package Advertising Co., New York
Smith & Son Inc., A.	63	John B. Ferguson, Jr., Philadelphia
Standard Signs, Inc.	51	Kenneth H. Kolpien Advertising, Cleveland
Stonehouse Signs, Inc.	Inside Back Cover	Walter DuBree Adv. Agency, Los Angeles
Tamco, Inc.	64	W. S. Hill Co., Pittsburgh
Tower Co., A. J.	58	Shattuck, Clifford & McMillan, Inc., Boston
United States Safety Service Co.	25	Phillips-Reick-Fordon, Kansas City
Watchemoket Optical Co., Inc.	4	Richard Thorndike Agency, Providence
Wilkins Co., Inc.	31	Laux Advertising, Inc., Ithaca

Only one pair of *EYES* to each of us

Guard them!

STONEHOUSE SIGNS
For Accident Prevention

297—A

1017—49

423—D

1301—12

177—9

104—9

SIGHT is a gift to be treasured. Yet carelessness often robs workers of this, their precious possession.

Impress upon your employees the vital importance of protecting their eyes. Wearing goggles is one very good way. Keep telling them—with the right signs, either stock or special worded.

The loss or impairment of hearing is another hazard. Protect your workers' ears from shattering, harmful noises in the plant. A worker who can't hear well is a real accident hazard.

Write for our complete Catalog— 64 pages, in full color. It's free.

Stonehouse SIGNS, inc. • Stonehouse Bldg., 9th at Larimer • Denver 4, Colo.

MANUFACTURERS

"Signs Since 1863"

ACCIDENT PREVENTION • *steel* SIGNS IN STANDARD COLORS AND DESIGNS

(For details, use Key # V-31 on card on page 371)

Thantis® LOZENGES

first aid for throat irritations

SORE THROATS due to coughs and colds, if neglected, may result in lost man hours of work.

THANTIS® Lozenges contain no antibiotic; they produce no unpleasant by-reactions in the mouth.

THANTIS Lozenges relieve pain promptly—reduce infection—act prophylactically.

Twenty-six years' extensive clinical and lay use has proved the safety and effectiveness of this popular product.

Mercurochrome®

First aid for wounds . . .

Neglect may cause infection which can be prevented by prompt use of 'Mercurochrome.'®

No antiseptic has been proved to be more effective than 'Mercurochrome' for topical application.

(For details, use Key # V-22 on card on page 37)

HYNSON, WESTCOTT & DUNNING, INC., BALTIMORE 1, MARYLAND